Railway Age

Vol. 80 April 3, 1926 No. 18

Prince of Wales and President de Alvear of Argentina on Baldwin-Westinghouse Electric Locomotive on the Buenos Aires & Western

Contents

Published every Saturday and daily eight times in June by the

Simmons-Boardman Publishing Company, 30 Church Street, New York

EDWARD A. SIMMONS, *President*
L. B. SHERMAN, *Vice-Pres.*
HENRY LEE, *Vice-Pres. & Treas.*
SAMUEL O. DUNN, *Vice-Pres.*
F. H. THOMPSON, *Vice-Pres.*
C. R. MILLS, *Vice-Pres.*
ROY V. WRIGHT, *Sec'y.*

CHICAGO: 608 South Dearborn St. CLEVELAND: 6007 Euclid Ave. LONDON, England: 34 Victoria St., Westminster, S. W. 1.
WASHINGTON: 17th and H Sts., N. W. SAN FRANCISCO: 74 New Montgomery St. Cable Address: Urasigmec, London
NEW ORLEANS, MANDEVILLE, LA.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

Subscriptions including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions, $8.00. When paid through the London office £1.15.0. Single copies, 25 cents each, or 1s.

Railway Age

Vol. 80, No. 18 April 3, 1926

Table of Contents Appears on Page 5 of Advertising Section

Conserve the Salesman's Time

MUCH has been written about the excessive cost of selling materials and supplies to the railroads. Considerable cost is probably unavoidable owing to the size of the railroad organizations and the fact that it is practically impossible to make one man solely responsible for the decision to purchase any single item of supplies. As a rule, a number of men must be convinced of the all-round merits of a device before it is ordered. It should be repeatedly emphasized to railroad men, however, that they can do much to reduce selling costs which in the end will react to the benefit of the railroads by conserving the time of supply representatives and letting them know frankly when there is little chance of their respective products being specified. Moreover, decisions should be made with as little delay as possible. In a recent instance, a sizeable equipment order was pending for a period of ten days with the expectation that it would be placed on each day. Naturally all the equipment companies interested had representatives in attendance, and to a considerable extent their time during that period was wasted, to say nothing of the expense of hotel bills and inability of the men to make plans for their subsequent work. One road seems to have hit on a happy practice in calling competitive supply men together to receive information regarding a prospective order and telling them that they may return on a certain day a week or so later when the order will be definitely placed. Railroad men do not like inefficiency and on the ground of efficiency alone all should contribute so far as possible to conserve the time and effort of railway supply representatives.

Effect of Rate Reductions

THE Interstate Commerce Commission's complete traffic statistics of the Class I roads for 1925 show that last year both the average freight rate and the average passenger rate of the railways were the lowest since 1920, both having declined last year. The only year throughout which the advances in rates made by the Interstate Commerce Commission late in 1920 were kept in effect was 1921. General reductions were made in rates on farm products at the beginning of 1922; general reductions were made in the rates on all other freight at the middle of 1922; and the statistics show that owing to constant readjustments, the trend of rates has been pretty steadily downward since. The average revenues per ton per mile during the last five years have been as follows: 1921, 1.275 cents; 1922, 1.177 cents; 1923, 1.116 cents; 1924, 1.116 cents; 1925, 1.098 cents. The average in 1925 was 14 per cent less than in 1921. The declines shown in the average rate may seem small, but on the basis of the freight business actually handled, they saved the shipping public the following amounts the last four years: 1922, $332,500,000; 1923, $656,236,000; 1924, $617,590,000; 1925, $733,028,000; total in four years, $2,339,354,000. The reduction in the average rate in western territory since 1921 has been from 1.422 cents per ton-mile to 1.196 cents, or 16 per cent. The savings to shippers in western territory, owing to reductions of rates, have been during the last four years as follows: 1922, $154,064,000; 1923, $267,217,000; 1924, $289,734,000; 1925, $321,961,000; total in four years, $1,032,976,000. The advance in rates for which the carriers in western territory are asking would amount to about $80,000,000 annually. Therefore, it would be only about one-fourth as great as the saving made by the shipping public in 1925 due to reductions of rates made since 1921.

Fitting the Bus to the Job

RAILROADS planning bus operation are at once faced with the task of deciding upon many questions of vital importance to the success of their enterprise. Not the least of these is the matter of the size of the highway equipment to be installed. Shall the entire fleet of buses installed be of a standard size,—that is, with respect to the seating capacity—or shall an effort be made to fit each separate unit of the system with a bus or buses of the particular size that it requires? There is naturally an appreciable difference between the cost of a large bus and that of a small one, the difference being in the first cost as well as in the direct operating cost. It is no more logical to put a bus of large capacity with its consequent higher operating cost on a run which can expect only a light traffic than it is to install a bus of small capacity on a run which must accommodate a heavy traffic. No railroad should saddle its bus operations with the burden of misfit equipment. It would not operate an eight-car train on a branch line in sparsely settled territory, nor a two-car train on the main line between points of heavy traffic. No more should it adopt such a principle in the operation of its buses. A few independent operators of motor buses have carefully fitted each of their runs with buses of the size, large or small, required by the available traffic. The results have been interesting. One instance of this sort will be described in the Motor Transport Section of the *Railway Age* of April 24.

The Gooding Bill

THE Gooding bill, to take away from the Interstate Commerce Commission authority, in its discretion, to permit railways to reduce rates in special cases to meet water competition, without at the same time reducing their rates to intermediate points, is again behind us for at least another year, having been decisively defeated in the Senate on March 24 by a vote of 46 to 33. In May, 1925, the Senate had voted for a similar but more drastic form of the bill, 54 to 23. As the next session of Congress is the short one, it will probably be two years before there is much danger of its being revived, although Senator Gooding, who makes it his principal stock in

trade, says he intends to continue to be persistent. It is interesting to note that the 33 senators who voted for the bill on this occasion include 13 from the seven so-called intermountain states, whose public men have for so long sought to off-set by legislation their disadvantage as compared with the Pacific coast states that have the benefit of competitive water transportation. Sometimes the intermountain states for this purpose are said to include Colorado, but the two senators from Colorado voted against the bill and Senator Warren of Wyoming was absent and did not vote. The intermountain senators for some years have constituted the nucleus of the support for bills of this kind and approximately a dozen more who voted for it this time are those who can usually be counted on as "anti-railroad," such as Brookhart, Couzens, Howell, Johnson of California, La Follette, Norris, Frazier and one or two others. Of the 54 who voted for the bill last year, 13 voted against it this time, 9 were absent, and some are no longer in the Senate.

Investigate the Causes of Damage

THE railroads of the United States are obliged to pay out annually about 37 million dollars for freight loss and damage. Without doubt no inconsiderable portion of this loss may be directly traced to rough handling and improper loading. The treatment for rough handling is, in many respects, like hot-box prevention in that it is simply a case of collecting the facts and keeping everlastingly at it. Some roads have conducted extensive tests with impact recorders and the evidence is astonishing. It has been found that from 90 per cent to 95 per cent of this "destructive handling," as the D. T. & I. "Railroad News" calls it, is the fault of yard crews. One need only observe the handling of cars in any large yard to realize that there lies a fertile field for some intensive education. Such a program will not only effect a substantial reduction in claims for damage but will result in the establishment of better relations between the shipper and the railroad. Improper loading of cars is a problem which is somewhat easier to solve. Here again it is the problem of the right kind of employee education. The car inspector must see much farther ahead of his job than the Loading Rules book. To the loading foreman or even the traffic manager at an industrial plant the car inspector is, in many respects, an important representative of the railroad. If, through ignorance or the lack of up-to-date knowledge of loading rules a car of merchandise or machinery is held up it means a loss in many ways other than in time. As a suggestion to mechanical and operating officers, might it not be worth while to find out just how well the car inspectors are acquainted with the people who are responsible for car loading in their respective districts? Possibly the results of such an investigation would offer convincing proof of the necessity of educational work in the car department. Damage claims are the result of many factors which will react to preventative measures. And, 37 million dollars offers a generous margin when you are looking for a place to save money.

The North Jersey Drawbridges

EXECUTIVES of several railroads which traverse Northern New Jersey, the chairman of the North Jersey Transit Commission, mayors of 136 municipalities of the section and representatives of 13 business men's organizations have petitioned the Secretary of War to permit the closing of 23 drawbridges over Newark Bay and the Hackensack and Passaic rivers between 7 and 9 a. m. and 4:30 and 6:30 p. m. Requests similar to this made in the past have been unavailing, but the situation with regard to highway and railway traffic in this area is becoming so serious that some relief is becoming most imperative. Supporting the application to the Secretary of War, the applicants appended an elaborate brief, which cites striking proof of the necessity for remedial action. The railroads in the area are finding it increasingly difficult adequately to handle the growing commuter business. The applicants estimate that the closing of the bridges to water traffic during the rush hours, as requested, when 52 per cent of the 24-hour traffic moves, would permit an improvement of from 12 to 15 per cent in commutation service. Commuters in July, 1925, lost 221,278 hours by reason of drawbridge openings, which loss could have been cut in half if the bridges had been closed during the rush hours. There were in that month, due to drawbridge openings, 4,564 train stops, each of which, of course, cost money. In addition, highway traffic—estimated to be slightly greater in volume and more than twice the value of water borne traffic in the area—experienced corresponding delays. Relief similar to that requested for Northern New Jersey was secured in Boston in 1910. Railroads which conduct a general transportation business, handling passengers, high-class freight and dead freight adopt the only commonsense view in handling them in order of their importance. The situation which prevails at these drawbridges is the same, and just as ridiculous, as if the railroads were to handle brick and gravel on first-class schedules, and passengers and perishables in 16-hour drags.

Railway Educational Clubs

SUPERVISORS or foremen's clubs were first started on a large scale a few years ago on the Pennsylvania and the Reading Railroads. The practice has gradually but steadily been extended to a number of other railroads, but naturally has been changed or modified to suit the local conditions. On the two roads above mentioned, supervisors and foremen from all departments on a division or at a terminal are included in the membership. The questions discussed must, of course, be sufficiently broad to interest the entire group. There is a distinct advantage in regularly getting together the supervisors of the various departments; it tends to encourage better inter-departmental understandings and teamwork. On the Boston & Maine, on the other hand, the foremen's club movement started in the mechanical department and there are now nine such clubs functioning. The tendency is, of course, to restrict the subjects discussed to questions primarily of interest to the mechanical department. While the inter-departmental contacts are lost in such clubs, there is said to be a more enthusiastic and intense participation in the club activities by the different members. This is indicated by the fact that the number of mechanical department foremen's clubs on the Boston & Maine has steadily increased, as has the attendance at the meetings of the different clubs. Moreover, the success of this movement in the mechanical department has been so striking that the supervisors of other departments are becoming interested in the possibilities of forming similar organizations within their own departments. The first concrete evidence of this is the Boosters Club in the stores department of the Billerica shops. It was recently organized and has held three meetings, one of these being addressed by the assistant to the mechanical superintendent, who spoke on the relation of the stores department to the mechanical department. Apparently this club is a forerunner of a number of other

organizations which may be formed in other departments. There is also the possibility that if a sufficient number of departmental clubs should be formed, joint meetings can occasionally be arranged in the interests of inter-departmental co-operation and teamwork.

Two Victories for Sound Regulation

TWO victories for sound regulation of railways were won last week. One of these was the defeat of the Gooding bill which, where the question of making lower rates for longer than for shorter hauls to meet water competition was involved, would have deprived the Interstate Commerce Commission of authority to fix the relations between rates. The other was the confirmation as a member of the Interstate Commerce Commission of Thomas F. Woodlock, who it could not be questioned is a man of ability and integrity possessing a special knowledge of railway and financial affairs, and the opposition to whose confirmation was based on the charge that he was "pro-railroad."

Railroad officers desired to see the Gooding bill defeated and Mr. Woodlock confirmed. This was enough to convince persons of radical tendencies that the Gooding bill ought to be passed and Mr. Woodlock's confirmation prevented. But a great majority of persons not connected with railways who have studied the problem of railway regulation also desired to see the Gooding bill defeated and Mr. Woodlock confirmed because it was clear a different outcome would be in direct contravention of every sound principle upon which the nation's present policy of federal regulation of railways is based.

The nation's present policy of regulation is based fundamentally on the premise that regulation of railways is necessary in the public interest. But their regulation presents a gigantic problem of tremendous complexity which it would be utterly impossible to solve by direct legislation by Congress. Consequently, the principle heretofore has been recognized that the statutes should require regulation to be reasonable, fair and constructive, and that the determination in all the innumerable controversies which must arise of what actually is reasonable, fair and constructive should be delegated to an administrative body the members of which can give their entire time to the study of the questions involved. The members of the Interstate Commerce Commission have given many years of study to the regulation of rates, and especially to the determination of how railway rates should be adjusted when and where water competition is encountered. The passage of the Gooding bill would have been in direct contravention of the principle of delegating to the commission the task and duty of determining and fixing reasonable relations between rates.

The contest over the confirmation of Mr. Woodlock involved the question of what qualifications appointees to the commission should possess. The bold claim recently has been made that the commission should be solely a representative of the "public" in regulating the railways. What has been plainly meant by this has been that the commission should not be an impartial body, but that it should always assume in a controversy, over rates, for example, that the railways are wrong until they demonstrate beyond any question that they are right.

This view is directly contrary to a principle which is implicit in all the provisions of law delegating to the commission its duties and authority. All these provisions direct the commission to determine and do what, after full hearing of all parties, it believes will be reasonable and fair. They are predicated on the premise that only by deciding and doing what is reasonable and fair can the commission protect and promote the public interest. Only an expert and impartial body could do what the law requires the commission to do. It necessarily follows that the law in effect requires the commission to be impartial.

If the commission is to be impartial its members must be unbiased when appointed or must rid themselves of bias after appointment. Everybody familiar with the history of the commission knows that extremely few unbiased men ever have been appointed to it. A large majority of its members have had an anti-railroad bias when appointed, and the commission never has been fair to the railways in its regulation. For years railway officers were almost the only persons who believed it was unfair to the railways. The long decline of the net return earned by the roads, in the prices of their securities, and in their development gradually convinced most business men and many public men that the commission had not been fair. The rate-making provisions of the Transportation Act were passed to cause more fair regulation. The percentages of net return the railways have earned during the last five years are the answer to the question whether even since the Transportation Act was passed the commission has been fair.

It would be a practical impossibility to find eleven men having any special knowledge of railway matters who could be appointed to the committee with the presumption that none of them would have any bias. The commission has now three or four members appointed within comparatively recent years who could not by any stretch of imagination have been assumed at the time of their appointment to have had no anti-railroad bias. Since it is a practical impossibility to get enough men who may reasonably be assumed to be wholly unbiased when appointed, the only alternative is to get men who may be assumed to have ability and fairness enough to try, after their appointment, to rid themselves of bias and perform their duties in accordance with the spirit and purpose of the laws under which they act. Experience has shown, however, that it cannot safely be expected that a commission composed predominantly of men who may reasonably be assumed to have had an anti-railroad bias at the time of appointment will be an impartial body. If men who have advocated government ownership, who have worked in close concert with radical labor leaders or who have acted as counsel for radical shippers' organizations are to be appointed to the commission, then surely there should also be appointed men whose experience and study have given them a different viewpoint and tendency.

Because the Interstate Commerce Commission recently has not decided against the railways some cases in which they were clearly right, it has been criticised by radical members of Congress upon the ground that it has been too "friendly" to the railways. It would be impossible to find any railway officer who thinks the commission has been too "friendly" to the railways. It is the practically unanimous opinion of railway officers that the commission's attitude on the vitally important question of valuation is unfair to the railways and is not in accord with the fundamental law of the land as interpreted by the Supreme Court. It is their practically unanimous opinion that the commission's administration of the rate-making provisions of the Transportation Act has been unfair and has not given effect to their plain intent. But railway officers have been convinced by both reason and experience that only through an administrative body such as the commission can it be hoped that a fair and constructive policy of regulation ever will be secured.

They appreciate that the commission has followed a policy of forbearance and co-operation regarding most purely operating matters that has been very helpful and constructive. They believe that a commission composed of able men would, regardless of their bias at the time of appointment, follow a fair and constructive policy in the regulation of rates if left free from political pressure by Congress. They know that direct regulation by Congress would be governed entirely by political considerations and would be ruinous. Most business leaders and students of railway regulation, including many public men, have reached the same conclusions; and therefore they stand firmly for regulation by commission.

The struggle to make political considerations dominate in the nation's policy of regulation has not ended, and probably never will end, but the two victories for sound regulation won last week are highly encouraging.

Purchasing and Stabilization

IT is supposed that the remarks of C. D. Young on railway supply questions, in last week's issue, have attracted the attention of many railway men. There have been few studies of the purchasing and stores question that have been developed more painstakingly and are more deserving of serious reflection by busy men. The effect of these remarks is primarily to re-emphasize the importance of stabilizing purchases. It has been repeatedly emphasized that this stabilization is one of the crying needs of the industry and that as long as statistics continue to disclose it to be the practice of railroads to rush into the markets when business is good and drop out of it when business is poor, they will continue to find themselves out of supplies and equipment when they need them and overstocked with unnecessarily high priced material when the demand has subsided, as well as to suffer from all the other ills complained of. In this connection, it is particularly of interest to note Mr. Young's charts on the way in which undelivered orders accumulate during periods of feverish buying. This illustrates again the importance of greater stabilization in this field.

Whether purchasing budgets, as proposed, will promote stabilization is a question upon which students of the subject will react differently. It is inevitable that differences should develop in view of the relatively recent origin of the subject. The probabilities are that the purchase budget idea will receive much opposition because, to users of supplies, it savors of putting the cart before the horse in railway buying. And it cannot be urged too strongly that in operating under purchase budgets, as they have been known in the past, there has been the tendency very frequently to throttle orders for material, much to the disadvantage of users of supplies who have not been notified in time to adapt themselves to the conditions imposed. It would seem, however, that purchase budgets offer a sound approach to the problem of stabilizing, providing they are in the nature of schedules for the quantities of materials which will be required at intervals and providing such budgets allow purchasing officers more latitude in placing orders than they are generally given at the present time under the principle that nothing should be bought until it is ordered. The success in controlling purchases in accordance with revenue and at the same time in keeping users supplied with the material needed that has been secured where responsible officers have been free to buy in advance of orders is a demonstration of the merits of the proposal for purchase budgets, however revolutionary it may appear at the present time.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.

Books and Pamphlets

The Development, Strategy and Traffic of the Illinois Central System, by C. H. Markham President. The history, natural advantages, resources, and present traffic characteristics of the system. Reprint from Economic Geography, Jan. 1926, with maps and illustrations. 18 p. Publisher not given, but probably available from the Illinois Central System, Chicago.

Economic Factors in the Railway Situation (1926), by Bureau of Railway Economics. Report made to American Railway Association on certain outstanding economic factors in the spring of 1926. Miscellaneous series Bulletin No. 39. 16 p. Published by Bureau of Railway Economics, Washington, D. C., Apply.

Railroad Freight Rate Structures: Eastern Territory, by Traffic Research Staff, LaSalle Extension Univ. *Railroad Freight Rate Structures: Southern Territory,* by Joseph H. Donnell. *Railroad Freight Rate Structures: Western Territory,* by Wayne E. Butterbaugh. History and application of present rate structures. 2 vols. each. Published by LaSalle Extension Univ., Chicago. $6.50 per set, or $2 for E. T., and $2.25 each for S. T. and W. T.

Periodical Articles

Locomotive Development on the Central Railroad of New Jersey, by Paul T. Warner. Article I, covering period to 1896. Illustrated. Baldwin Locomotives, April 1926, p. 8-23.

Rail Transport Systems of the United States, by C. E. R. Sherrington. The author is Secretary, Railway Information Bureau, London, and has lived in this country. Journal of the Institute of Transport, March, 1926, p. 246-258.

The Railroad War in Texas, by French Strother. "Battle for the Rio Grande Vegetable Traffic" described, preceded by brief histories of the Kansas City Southern, the Missouri Pacific, and the Southern Pacific in the Rio Grande Valley. Maps. World's Work, April, 1926, p. 610-615.

Team Work to Save a Railroad, by E. V. Wilcox. 15,000 citizens along the New York & Pennsylvania headed by the general manager, and a Presbyterian minister co-operated to save the railroad from abandonment. Nation's Business, April, 1926, p. 36-38.

What Are the Stockholder's Rights? by F. S. Tisdale. Summary of some views of the banking and business world on the points made by Prof. W. Z. Ripley before the American Academy of Political Science, and in magazine articles. Nation's Business, April, 1926, p. 22-24.

It Didn't Just Happen, by Atlantic Coast Line Railroad Co. An illustrated booklet on the development of the Coast Line, including maps showing transportation conditions in its territory in 1850 and 1926 and illustrations showing features of present-day construction, maintenance, and operation. 32 p. Pub. by Public Relations Dept., Atlantic Coast Line Railroad Co., Wilmington, N. C. Apply.

Getting Business for the Railroad, by Jesse Rainsford Sprague. Work and problems of the off-line agencies. Saturday Evening Post, March 20, 1926, p. 48, 50, 52.

Railroads Strive for "Air Line" to West, by Prof. Wm. Z. Ripley. . . "the strategy behind the proposed trunk line consolidations." Includes two maps. New York Times, March 21, 1926, Section 9, page 1, 15.

Letters to the Editor

A Hump Record?

NEW HAVEN, Conn.

TO THE EDITOR:

On Saturday, March 20, the crew on the westbound hump, at our Cedar Hill Terminal, made a record and I would like to inquire through the columns of your paper as to whether it has ever been equaled on any railroad in America.

A crew of 15 car riders on the 8 a. m. to 4 p. m. shift put 1,130 cars over the hump, there being 802 cuts in these 1,130 cars. This is an average of 53.5 rides per man; and, deducting the 20-minute lunch period, equals a ride every 8 minutes, 36 seconds, during the 8-hour period. I know, of course, that more cars have been switched in 8 hours than is indicated above, but I am anxious to know if the number of rides per man per 8-hour shift for the entire crew was ever exceeded, or equalled, in this country.

E. E. REGAN,
General Superintendent, N. Y., N. H. & H.

Fuel Efficiency of Steam and Electric Locomotives

NEW HAVEN, Conn.

TO THE EDITOR:

I have read with much interest the editorial appearing on page 839 of your issue of March 20th entitled "Steam Locomotive Efficient." I am constrained, however, to take exception to some of the figures presented.

You quote 1923 "average" electric power plant economies, and imply a comparison with 1925 steam locomotives of the highest type. This is hardly fair, especially as you say in effect that the "average" electric power plant figure of "1.8 lb. of coal per indicated horsepower" is "only 18 per cent less than the locomotive figure" quoted as 2.20 to 2.60 lb. of coal per indicated horsepower per hour. This figure, even as you develop it, should read 18 per cent to 31 per cent less than the locomotive figure.

There is, however, another and more seriously misleading statement to which attention should, I think, be called. You say "The figures for the best modern plants, however, are but 1.2 to 1.4 lb. of coal per indicated horsepower per hour." These figures are high even for 1923, but they should be brought up to date for comparison with the "recent" steam locomotives under discussion. A number of modern steam plants are manufacturing a kilowatt-hour of output, which includes losses in the electric generator, etc., for less than one pound of coal. If this figure is corrected to correspond to the "indicated horsepower hour" by eliminating generator losses, friction, etc., the result would be .71 pounds of coal which should replace the figures given by you as "1.2 to 1.4 lb."

It is of course true that a fair comparison between the steam power plant and the steam locomotive should presuppose the electric power delivered at the locomotive. If, therefore, line losses and electric locomotive motor efficiency are taken into account, a horsepower hour delivered at the gears of an electric locomotive would represent .85 lb. of coal under modern conditions. This figure compares with 2.20 to 2.60 lb. quoted for steam locomotives, or a reduction of fuel requirements by electric power of between 60 and 70 per cent. This means that disregarding entirely all standby losses of the steam locomotive and all losses due to careless or unskillful manipulation by the engine crew, which as we all know too often occur, about one-third to one-quarter as much fuel is required under electric operation as with steam under modern conditions, and that the modern power plant has kept pace relatively with the improvements recently made in steam locomotive efficiency.

SIDNEY WITHINGTON,
Electrical Engineer, New York, New Haven & Hartford.

From a Passenger's Viewpoint

NEW YORK.

TO THE EDITOR:

Certain practices are in vogue today in connection with the operation of Pullman chair cars which tend to give passengers a feeling of dissatisfaction with the service. Not long ago I traveled on one of the crack trains of an eastern railroad in a wooden chair car which was one of two such cars in the middle of a steel train. The experience reminded me of several similar ones in the recent past.

Whether or not the placing of wooden cars between steel cars is a dangerous practice, I am not in a position to say, but it surely makes the passengers somewhat uneasy. The application of steel sheathing to the outside of a wooden car may be excellent from the viewpoint of reducing the cost of equipment maintenance, but it looks rather like giving the passengers a plated article instead of the genuine thing. Anyone with mediocre powers of observation can tell easily whether or not a car really is of steel or only made to look like it.

Another irritating practice is often noticeable in connection with the operation of chair cars having no smoking compartment. A club car is thoughtfully provided so that passengers may enjoy a smoke during the trip. Then the Pullman conductor proceeds to sell so many seats in the club car that passengers from other cars have practically no opportunity to find chairs in the club car when they want to smoke. I believe the majority of passengers would be better pleased if cars with smoking compartments were provided and club cars omitted from the make-up of the train.

J. A. MILLER, JR.

Alliterative Advertising Ad Lib.

BETHLEHEM, Pa.

TO THE EDITOR:

A recent issue of the *Railway Age* gave Kurious Citizens Sundry interesting examples of recent advertising experiments of the Kansas City Southern. Requiring of its employees Kindly, Courteous Service, that company is reputed to

KEEP CUSTOMERS SATISFIED.

And, now, I read that a general superintendent of the Canadian Pacific Railway, reminding his subordinates in the passenger department that, so far as the public is concerned, they are the "C. P. R.," calls upon them to manifest at all times

CIVILITY, POLITENESS AND RESOURCEFULNESS.

Whether or not the Northern Pacific requires every man to be

NEARLY PERFECT

is a point on which as yet, no information has been given out. In conveying these profound thoughts to the readers of the *Railway Age*, it is a duty to remind them that the

CHICAGO, BURLINGTON & QUINCY
was known in Boston, Chicago and other places, 40 years ago as the

CHEAPEST, BEST AND QUICKEST
route to the west, and it would be rude to question the statement today. In Florida somebody says that

ALL CONCERNED LOVE
the
ATLANTIC COAST LINE
but very likely many of the same people

SWEAR ALL LOYALTY
to the
SEABOARD AIR LINE

Safe Return by way of the Southern Railway would be to some people an alluring alliteration, but I am not advocating it; only giving it favorable mention. I am ready to declare, however, with Unwearied Pertinacity that the

UNION PACIFIC
is
UNIFORMLY PUNCTUAL

If the foregoing seems, Mr. Editor, to partake somewhat of a childish character, let me remind you that nearly all of the most successful advertising sharps are running to childishness these days. And even if you do hold me somewhat guilty in that respect I protest that I am only endeavoring to say a few pretty things to cheer up my friends on the different roads which have been named. I mean business, however, in all seriousness, and am fully justified by the best principles of the up-to-date advertising technicians, when I call to the attention of the readers of the *Railway Age* that there is a wealth of Lovely Views along the line of the

LEHIGH VALLEY.

Railroads and Leather Belting

PHILADELPHIA, Pa.

TO THE EDITOR:

For many years many of the railroads have been receiving and using in their shops an inferior class of leather belting, from which they have been getting poor results. Other lines of industry, some of them using the same classes of machinery as the railroads, have found the road to efficiency through the purchase of a higher class of belting, but many of the railroads cling to their old habit of buying the cheapest product offered, and the quality of leather belting supplied to the railroads has become a scandal in the leather belting trade.

Most of the railroads have specifications of one kind or another applying to leather belting. Some are exacting in their requirements, and were they followed the road would receive a good product. But in many cases the material is accepted without any intelligent or adequate inspection. The fact that material is accepted in this way becomes known and hence a greatly inferior product is delivered. This in turn makes it possible for the informed seller to offer a price which any house bidding on specifications cannot possibly meet. Thus when a railroad asks for bids on a certain lot of leather belting under its specifications, and in reply receives prices from 10 or 12 houses, most of which are around the general market price, and fairly close together, but two or three of which are very much lower, as is often the case, the difference, it should be known, does not mean that those who are bidding the higher prices are trying to "hold up" the company, or that there is any combination or agreement between them, for a price agreement in a competitive article like leather belting is impossible. Nor does it mean that the lower prices are necessarily so because of better facilities for manufacture, or because of a highly developed spirit of philanthropy, but instead it usually means that those making the two or three lower prices, in some manner have learned that it is possible to have material accepted by the railroad which does not comply with specifications.

This condition need not imply any dishonesty on the part of inspectors, or lack of fidelity to the interests of the company. The probabilities are that in most cases it arises from an insufficient understanding of the commodity. Some railroads are buying under the federal specifications for leather belting, and others under their own specifications, which usually are not much different, and all of which call for a good practicable quality of leather belting, just about the same in quality and cost of production as the better manufacturers are selling for their first quality. The general price for this quality of belting, in medium weight, for the larger part of 1925, was on discount basis from 40 to 45 per cent, with occasional sales in large quantities made at discounts as low as 50 per cent. The year was a disastrous one for the manufacturers of leather belting. None of them made substantial profits and few were able to pay even a small dividend. A number of them ended the year with their balances in "red." This means that leather belting was sold for the year at just about cost, or a little less. The average price of "first quality medium" was 45 per cent, and the experience of the year proved that this was also about the average cost price.

Some railroads bought belting at very much lower prices—at discounts ranging from 60-10 per cent to as low as 70 per cent, or at prices which were from one-third to one-half lower than the experience shows to have been the fair price. A discount of 70 per cent on a 14-oz. belt is equivalent to 98 cents per lb. for the finished belting, after the waste has been eliminated, and including all expenses, while 36-in. finished centers, from which first quality belting is supposed to be made, were quoted freely in the trade papers at $1.04 per lb., or 6 cents more than the finished belt, though the center includes 25 per cent of waste, besides the costs of manufacture. In other words, to offer first quality leather belting at 60-10 per cent or 70 per cent discount is to sell the railroad manufactured belting at a price some 15 or 20 cents per lb. less than it can get for its raw material on the market.

Evidently the belt at 70 per cent, regardless of what may be said in its favor by a desirous seller, must be made from something different than "center stock within 15-in. or 18-in. from the back-bone." As a matter of fact, a belt at that price can be made of nothing but the poorest of bellies and shoulders, and it is this stuff that is playing the mischief in the railroad shops and injuring the reputation of the leather belt.

The railroads cannot hope to get the best from their machinery by the use of belting bought at 60-10 per cent to 70 per cent, but by paying a fair price for it, and by careful inspection, making sure that they get what they are buying, there can be made a vast improvement in the power transmission of most of the shops.

The Leather Belting Exchange has nothing to sell, and does not care from whom the railroads buy their belting, but in the interest of the industry it is desirous that the railroads get from their belting purchases that efficiency of which it is capable.

LOUIS W. ARNY,
Secretary, The Leather Belting Exchange.

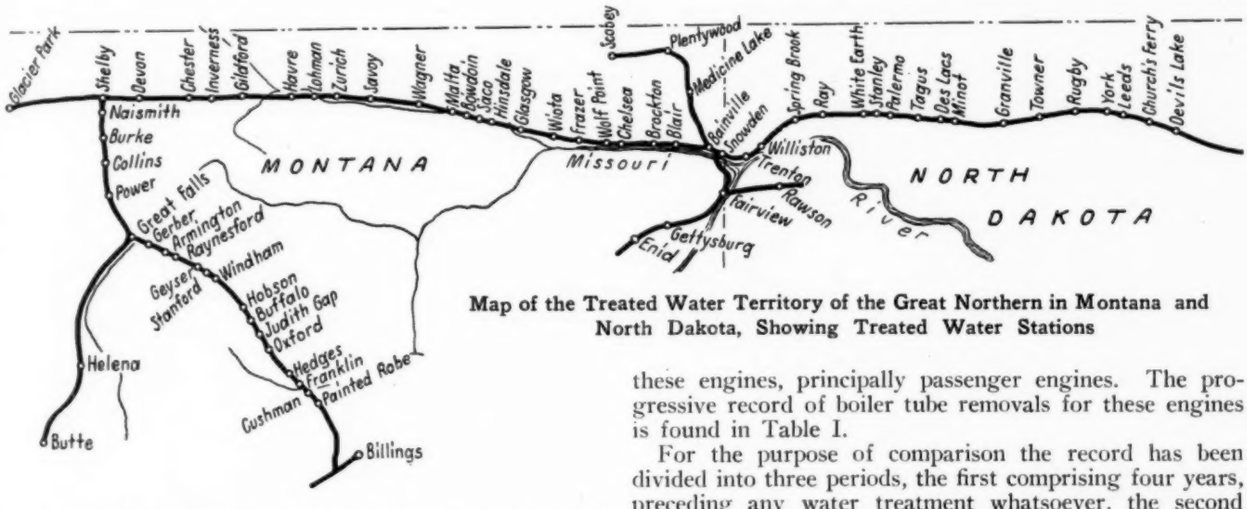
Havre, Mont., in the Center of a Boiler Pitting Territory

Great Northern Reduces Pitting of Locomotive Boilers

Changes in water treating methods yield striking results—Mileage doubled and tube life trebled

THE Great Northern has been devoting concerted efforts for several years to the solution of an imposing pitting problem. The last two or three years having produced evidences of success in this direction, arrangements were made with this road for an investigation of the work. With the co-operation of the officers during the last 18 months the various information has been accumulated and correlated and is now presented for the first time in as complete form as can be done in an article of this scope. The study discloses in general that boiler pitting has been substantially reduced in the region in question and that the method of water conditioning followed by this road for the past five years is chiefly responsible for the results. The average service of tubes between partial and complete removals has been extended from 13 to 28 months, the mileage between shoppings from 60,000 to 100,000 and the life of tubes from three years and less to nine years and more. Other boiler work attributable to pitting is greatly reduced and, instead of proving greater, the net cost of water treatment has been noticeably decreased.

These results derive their credibility principally from the analysis of the detailed shop work reports of approximately 125 engines on the Montana division of this road, a division extending 450 miles from Williston, N. D., to Cut Bank, Mont., where pitting has been particularly severe and troublesome. A study was first made of the road engines which were reported to have been exclusively assigned to and in continuous service on this division from 1911 to the end of 1925. There were 22 of these engines, principally passenger engines. The progressive record of boiler tube removals for these engines is found in Table I.



Map of the Treated Water Territory of the Great Northern in Montana and North Dakota, Showing Treated Water Stations

For the purpose of comparison the record has been divided into three periods, the first comprising four years, preceding any water treatment whatsoever, the second period including five years of complete water treatment, and the third period comprising the last five years, during which a modified form of water treatment has been followed as will be explained later. In all cases, a removal of 10 or more flues for whatever purpose has been recorded, although the majority of removals involved complete sets. In developing the tables, flues recorded in work sheets as reset or repaired or second hand were classified as repaired flues. New flues were recorded separately. All removals were allocated to the period embracing the year in which the removals were actually made, except in one or two cases, where the removal occurred in the first two months of the first year of the period, when it was allocated to the previous period.

While the lack of differentiation in boiler records as to the specific tubes involved in each removal makes it im-

possible to follow individual tubes or even sets except in a few isolated cases where complete sets were involved, the deductions from this table are striking. The table gives an average interval between flue removals during the period preceding any water treatment of 12 months, an average interval for the first period of water treatment of 19 months and an average interval for the last period of 27 months, after deducting a month in each case for the time out of service in shops. In interpreting these figures (as well as those for engines to be discussed later), it is to be observed with reference to the averages for the third period that the tube removals include in large part the removals of tubes applied in the previous period, that in arriving at the averages any interval exceeding 48 months was disregarded and especially that no consideration was given to instances where engines had run 33 or 36 months since the last removal date without shop work.

In arriving at the life of flues the method was adopted of determining in each case the ratio which the new flues applied in each removal bore to the total number of tubes in a set. The average was 40 per cent for the first period, 30 per cent for the second period and 15 per cent for the last period. On the assumption, supported by the statements of officers of this road, that practically all applications of new flues for these engines represented a corresponding number of flues scrapped, this places the average life of flues at 2½ years for the first period, 5 years for the second period and 15 years for the third. In the few cases in the first period where a complete new set of

TABLE I—PROGRESSIVE RECORD OF BOILER TUBE RENEWALS

Road engines continuously on Montana division since 1911

Engine numbers	1912 to 1915				1916 to 1920				1921 to 1925				
	Months to last renewal	Rep'd tubes applied	New tubes applied	Per cent new tubes	Months to last renewal	Rep'd tubes applied	New tubes applied	Per cent new tubes	Months to last renewal	Rep'd tubes applied	New tubes applied	Per cent new tubes	Months since renewal
1160	7	...	330	100	14	331	...	...	40	331	...	...	32
....	9	331	...	...	..	...	...	...	..	...	...	...	..
1232	17	331	...	...	12	331	...	...	31	...	331	100	43
....	22	86	...	...	17	345	...	...	..	...	...	...	..
....	..	...	...	...	27	156	175	50	..	..	...	...	..
1250	13	145	186	60	34	331	...	...	24	151	180	55	15
....	7	...	25	7	26	331	...	...	36	331	...	...	..
1446	27	192	...	...	38	75	114	...	20	192	...	...	3
....	..	...	...	...	26	192	...	...	33	192	...	...	..
1458	..	...	...	...	..	...	...	...	26	60	181	90	7
....	20	16	176	90	22	32	55	30	36	187	...	...	..
....	24	190	...	...	18	...	135	70	..	...	...	...	..
....	..	...	...	...	9	124	62	40	..	...	...	...	..
1460	20	43	192	100	16	127	61	30	13	187	...	...	10
....	17	42	...	...	14	107	81	40	21	59	...	...	..
....	2	73	105	50	16	167	20	10	17	192	...	...	..
....	..	...	...	...	19	...	87	50	..	...	...	...	..
1526	15	...	80	30	9	203	85	30	44	286	...	...	17
....	4	288	8	5	17	263	25	10	..	...	...	...	..
....	19	288	...	...	29	286	...	...	..	...	...	...	..
1578	13	...	288	100	23	286	...	...	26	286	...	...	46
....	15	288	...	...	13	...	288	...	..	...	...	...	..
....	..	...	...	...	14	286	...	...	..	...	...	...	..
....	..	...	...	...	16	...	308	...	..	...	...	...	..
1596	12	288	...	...	35	186	...	...	37	186	...	...	6
....	19	156	30	10	21	...	186	100	29	186	...	...	..
....	7	156	30	10	..	...	...	...	..	...	...	...	..
1700	16	...	200	65	40	288	...	...	..	...	...	...	14
....	13	...	301	105	..	...	...	...	..	...	...	...	..
....	16	...	288	100	..	...	...	...	..	...	...	...	..
1702	15	...	301	105	35	235	50	25	44	150	30	10	17
....	18	...	...	...	..	...	...	...	..	...	...	...	..
....	2	288	...	...	45	288	...	...	..	...	...	...	..
....	5	301	...	...	..	...	...	...	..	...	...	...	..
1703	10	...	288	100	39	288	...	...	14	...	186	60	14
....	13	288	...	...	21	...	288	100	21	186	...	...	..
....	..	...	...	...	19	...	5	5	..	...	...	...	..
1704	9	108	180	60	24	288	...	...	39	288	32	10	9
....	12	...	288	100	23	300	...	...	16	151	...	...	..
....	16	...	288	100	15	...	288	100	..	...	...	...	..
1705	7	115	...	...	20	...	50	25	17	156	30	10	9
....	8	288	...	...	23	...	286	100	34	86	...	...	..
....	9	...	288	100	12	286	...	...	..	...	...	...	..
....	22	286	...	...	..	...	...	...	..	...	...	...	..
1706	12	...	288	100	24	180	...	...	34	186	15	5	24
....	18	127	65	35	24	186	...	...	..	...	...	...	..
....	12	18	12	5	20	186	...	...	..	...	...	...	..
1707	12	288	...	...	25	32	154	80	38	166	20	10	24
....	11	...	288	100	11	186	...	...	..	...	...	...	..
....	11	156	30	20	20	186	...	...	..	...	...	...	..
....	..	...	...	...	16	...	186	100	..	...	...	...	..
1709	16	234	54	20	20	...	60	35	26	75	4	50	30
....	18	288	...	...	12	...	288	100	26	86	100	...	..
....	..	...	...	...	10	186	...	...	..	...	...	...	..
1708	12	301	...	...	14	288	...	...	30	66	120	65	20
....	14	288	...	...	22	288	...	...	..	...	...	...	..
....	17	288	...	...	18	...	186	100	..	...	...	...	..
....	12	...	288	100	..	...	...	...	..	...	...	...	..
1701	15	40	261	90	18	133	155	55	17	156	30	15	18
....	23	288	...	...	20	288	...	...	39	186	...	...	..
....	..	...	...	...	16	...	288	100	..	...	...	...	..
1551	12	...	288	100	21	128	58	30	22	...	100	50	21
....	20	35	...	...	19	...	186	100	15	186	...	...	..
....	18	156	30	15	22	186	...	...	..	...	...	...	..
1450	15	...	188	100	24	187	...	...	31	192	...	...	..
....	13	25	...	...	16	4	183	100	..	...	...	...	..
....	12	32	156	80	6	85	...	...	..	...	...	...	..
....	..	...	...	...	19	...	187	100	..	...	...	...	..
1507	19	...	288	100	12	288	...	...	..	...	...	...	12
....	8	35	...	...	19	...	288	100	31	301	...	...	..
....	12	...	288	100	10	288	76	30	41	291	...	...	..
....	11	288	...	...	..	...	...	...	..	...	...	...	..
Total	823	7474	6396	2362	1259	9437	4944	1845	967	5734	1359	530	391
Av. Renewal	13	...	...	40	20	...	...	30	28	...	...	15	..
Av. Tubes per yr.		1868	1599	...	..	1885	989	...	..	1147	272	...	..
Av. Tubes per yr.*		1918	1599	...	..	2043	1064	...	..	1343	380	...	..
Av. Tubes per yr.**		2362	2120	...	..	2043	1064	...	..	1343	380	...	..

* Adjusted to compensate for conversions of engines to superheaters subsequent to 1912.
** Further adjustment to include all tubes applied since January, 1912.

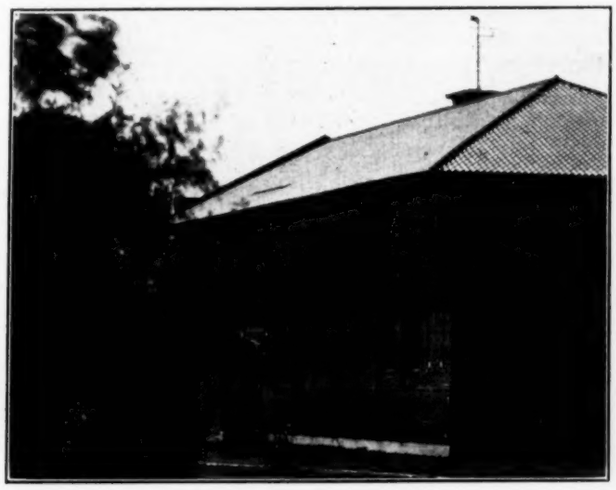
tubes applied at one shopping was replaced by a complete new set at the next shopping, the average interval was 15 months, while in the third period where there was one case of this kind, the interval was 31 months.

Other Engines Show Similar Improvement

The significance of these records is by no means diminished by the records of the second group of engines

A Great Northern Water Treating Installation Typical of Those on the Montana Division

considered in the analysis. In this group were included 41 engines which, while not employed exclusively on the Montana division from 1911 to 1925, had been operating on this division long enough (the majority from 1916 or before) to make their record while continuously on this division valuable in this study, particularly in view of the fact that they were all road engines and largely engaged in freight service. The average interval between removal dates for these engines was found to be 15 months for the first period (determined similarly as was done with the first engines considered), 16 months for the second period and 29 months for the third period, while the life of flues, also determined as before, was 3 years for the first period, 4½ years for the second period and 10 years for the third period. Here also the instances where a set



The Universities Can Help Railroads Solve Their Pitting Problems—The Chemstry Building of the Montana State College Where the Great Northern Conducted Pitting Studies

of new tubes were renewed at the next shopping showed a life ranging from 16 to 38 months during the second period (there were none for the first period) as against 30 months for the single case that was found in the removals of the third period, while again it is noted that the figures

Table II.—Engines in Continuous Service on Montana Division Since Purchase in 1918

Engine numbers	1916 to 1920: Months to last renewal	1916 to 1920: Repaired tubes applied	1916 to 1920: New tubes applied	1916 to 1920: Per cent new tubes	1921 to 1925: Months to last renewal	1921 to 1925: Repaired tubes applied	1921 to 1925: New tubes applied	1921 to 1925: Per cent new tubes	1921 to 1925: Months service since	1921 to 1925*: Months to last renewal	1921 to 1925*: Repaired tubes applied	1921 to 1925*: New tubes applied
3105	17	165	175	50	30	340	...	...	35	..	...	...
3106	18	...	186	60	24	...	340	100	8	34	...	172
....	..	...	...	...	34	...	172	...	..	..	...	...
3108	12	...	152	100	33	304	...	...	30	..	...	...
3109	12	340	...	...	..	...	...	...	60	60	...	...
....	18	...	340	100	..	...	...	...	..	..	...	...
3110	18	...	340	100	31	320	30	10	36	..	...	...
3111	14	304	...	...	31	340	...	...	27	30	320	20
....	16	...	340	100	..	...	...	...	..	31	340	...
3112	18	36	304	90	18	36	304	90	12	..	...	...
....	..	...	...	...	41	340	...	...	..	41	340	...
3113	11	340	...	...	25	...	340	100	33	..	...	...
....	20	...	340	100	..	...	...	...	..	26	...	340
3114	14	340	...	...	21	...	340	100	7	..	...	...
....	..	...	...	...	21	340	...	...	..	23	340	...
....	..	...	...	...	27	340	...	...	..	27	340	...
3115	15	340	100	30	24	340	...	...	6	..	...	...
....	18	...	340	100	26	340	...	...	..	24	340	...
3116	12	340	...	...	31	340	...	...	30	24	340	...
....	18	...	340	100	..	...	...	...	..	31	340	...
3117	18	...	340	100	18	...	340	100	30	..	...	...
....	..	...	...	...	24	340	...	...	..	22	340	...
3118	16	30	310	90	24	340	...	...	26	..	...	...
....	..	...	...	...	27	...	340	100	..	..	...	...
3119	16	30	310	90	24	...	340	100	15	..	...	...
....	..	...	...	...	36	340	...	...	..	36	340	...
3120	20	...	340	100	21	340	...	...	38	..	...	...
....	..	...	...	...	12	340	...	...	..	..	...	...
....	..	...	...	...	15	...	340	100	..	..	...	...
3121	16	340	...	...	34	64	376	80	38	..	...	...
3122	28	...	340	100	12	340	...	...	48	..	...	...
....	9	340	...	...	..	...	...	...	..	..	...	...
3123	17	74	266	80	33	340	...	...	38	..	...	...
3124	23	286	54	15	20	340	...	...	44	..	...	...
3126	30	...	340	100	27	340	...	...	16	27	340	...
....	..	...	...	...	14	340	...	...	..	14	340	...
3127	20	340	...	...	19	340	...	...	19	..	...	...
....	..	...	...	...	31	340	...	...	..	..	...	...
3131	19	186	151	45	33	...	340	100	32	..	...	...
3134	22	...	340	100	31	340	...	...	33	31	340	...
3135	20	30	304	90	16	340	...	...	38	..	...	...
3137	22	...	340	100	27	340	...	...	35	..	...	...
Total	547	3861	6392	1940	915	8544	3602	980	734	481	4400	532
Average	17	...	...	62	25	...	...	27	28	30	...	...

*Figures in this section restricted to engines in previous group which got complete sets new flues since 1920.

for the third period are based only upon actual removals not open to question and do not include instances of prolonged service from the last tube shopping date.

In addition to the above engines there were included among the locomotives assigned to this division a list of 25 Mikado engines which were placed in service during 1918. Thus the flues in these locomotives were all new in 1918. The average interval between removals for these engines, determined as before, was found to be 16 months during the period prior to 1921, as compared with an average interval of 24 months in the last five years, while on the basis of the percentage of new flues applied at each removal the life of flues averaged from 2 to 2½ years for the period up to 1921, as against 8½ years for the period since. When in the study of removals for the last five years only those engines of this series are considered that had complete sets of new flues applied since the last five-year period began, the average interval between the removals of the period since that time is increased to 30 months. In this connection attention is again called to the fact that in determining these averages no consideration was given to the many instances (the actual number is 15) where engines of this series had run from 30 to 38 months from the last removal of tubes up to the end of the period studied without any further boiler work.

New Engines Run Three Years

Another group of engines studied comprised 11 locomotives which were installed on this division during 1920, immediately following their purchase and which have been operating continuously on this division since. While these engines afford no comparisons with the period prior to 1921, their records from the month of their arrival on the division show an average interval between removals of 31 months (when reduced by one month to allow for idle time in the shop) while there was only one case found

Table III—Data for New Engines

	New in 1920				New in 1923	
Engine number	Months to last renewal	Repaired tubes applied	New tubes applied	Months service since	Engine number	Months service since
3210	32	...	391	41	3300	24
3211	36	391	...	24	3304	34
3212	32	291	...	29	3305	35
3213	29	286	1	32	3311	31
3214	32	291	...	29	3312	32
3215	40	291	...	20	3213	32
3216	41	291	...	21	3314	26
3217*	24	147	34	27	3315	28
....	8	291	...	...	3316	25
3218	36	291	...	23	3318	12
3222	34	291	...	26	3319	22
3223	43	...	90	17	3321	22
....	...	...	...	...	3322	22
....	...	...	...	...	3323	22
....	...	...	...	...	3324	22
....	...	...	...	...	3325	22
Total	387	2861	516	289	Total	411
Average	32	...	...	26	Average	32

* Changed to superheater.

of a complete renewal with new flues. These engines, moreover, are shown to have been operating from 17 to 41 months, or an average of about 26 months, from their last tube removal dates up to the end of 1925, without any boiler work.

Finally, the study included 16 other new engines of this type which have been operating continuously on this division from their arrival on the division in 1923, since which there has only been one instance where any flues were removed while in several cases these engines show service records of 30 months from their last shopping up to the end of 1925 without boiler work.

When all of these groups, involving 115 engines, are considered together, an average interval between flue removals of 13 months is obtained for the period before water treatment, an interval of 17 months for the first period of water treatment, and an interval of 28 months for the last five years (allowing for one month's idle time at each shopping) while the flue life computed on the basis outlined is 2.8 years for the first period, 3 years for the second period and 10 years for the third period.

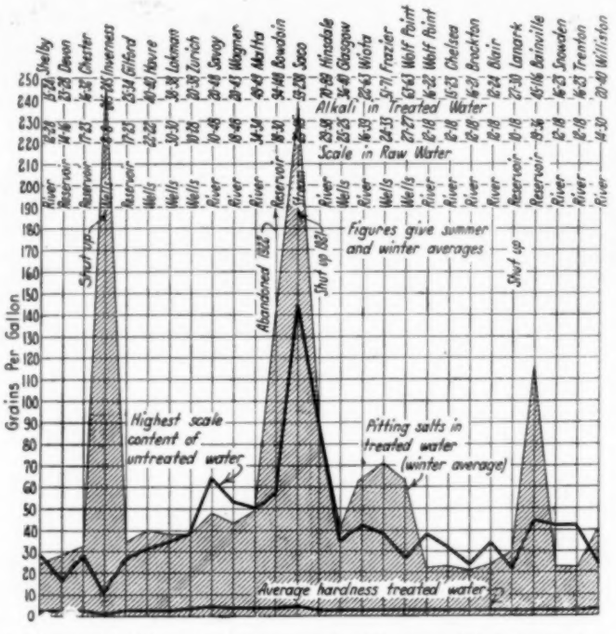
Composite Data on Boiler Tube Service*

	1912 to 1915		1916 to 1920		1921 to 1925	
Engines involved	Time between tube removals, months	Life of tubes, years	Time between tube removals, months	Life of tubes, years	Time between tubes removals, months	Life of tubes, years
22	12	2.5	19	5.0	27	15
41	15	4.0	16	4.0	29	8
25	..	2.0	16	...	24	8.5
11	..	...	..	...	31	10
Average	13	2.8	17	3.0	28	10.5

*All Removal Periods Reduced One Month for Idle Shop Time

Engines Now Run 100,000 Miles Between Shoppings

The mileage that an engine produces between shoppings is of little value in itself as a measure of pitting, but, like flue service, may properly be considered in any study



A Chart of Water Conditions on the Montana Division Before and After Treatment

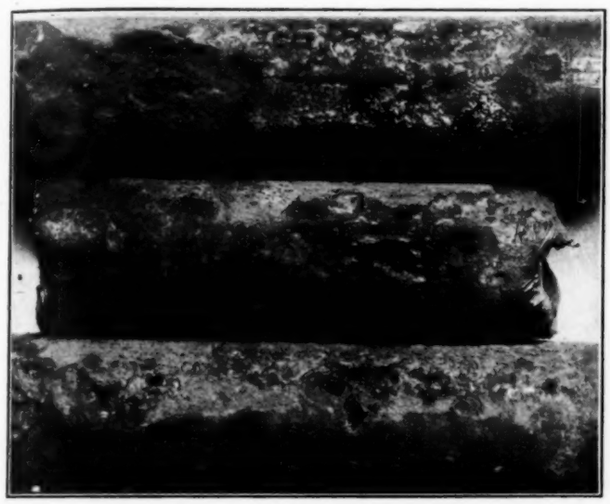
where pitting is known to have influenced it. It has been practicable to secure mileage data only for those engines considered in the first table. In securing this information, moreover, it has been possible to secure only the record of mileage in periods between general shoppings as distinguished from those shoppings which involved flue renewals only. It has also been impossible to obtain records previous to 1915, but it is significant, particularly with reference to the last five years, that the records for the 22 engines exclusively on the division since 1911 gave an average mileage of 59,733 for the first period and 53,512 for the second period, as compared with 109,030 for the third period, while the mileages reported since the last shopping of these engines show the same tendency towards producing prolonged records of service indicated by the record of flue removals.

One-Fifth as Many New Tubes

More important to a pitting study than mileages are the comparisons of the number of tubes involved in those instances where their application has been required. At-

tention is again called to Table I, since all of the engines in this group have been in service throughout the 14 years in question. From the table it will be seen that there were 3,480 tubes handled per year in the first period for the 22 engines involved, as compared with 2,870 per year for the second period, and only 1,440 per year in the third period, or in the ratio of 2.4 and 2.0, respectively, to 1.

The number of new tubes applied was 1,600 per year in the first period, 990 per year in the second period and 272 per year only in the third period, or in the ratio of 6.0 and 3.6 to 1. There are two possible modifications of this record. In the first place the conversion of some



Sections of Boiler Tubes as They Pit on the Great Northern—Note the Hole Through the Lower Tube

of these engines to superheaters during the second and third periods created a condition calling for fewer tubes in subsequent renewals, while on the other hand the total number of tubes reported for the first period does not include the first applications in this period from which all subsequent renewals are dated. These adjustments are made (1) by adding the latter tubes for the first period (including no tubes, however, that were applied previous to 1912) and (2) by enlarging the number of new and repaired flues proportionately in the second and third periods. The adjusted result is 4,482 flues handled per year for the first period, 3,107 for the second period, and 1,723 for the third period or in the ratio of 2.6 for the first period and 1.8 for the second period to 1 in the third period, while the total number of tubes repaired are in the ratio of 1.7 for the first period and 1.5 for the second period to 1 in the third period. The ratio of new tubes

New Tubes Issued at Havre, Montana

Year	2-in.	2¼-in.	5-in.	5½-in.
1919	3,275	3,376	71	337
1920	4,608	1,569	..	481
1921	3,204	2,067	70	451
1922	398	618	47	109
1923	1,384	809	34	189
1924	304	626	..	148
1925	723	276	..	97

applied, which is of the most importance since it indicates scrappage, becomes 5.5 for the first period and 2.8 for the second period, to 1 in the third period.

Data supporting the above comparisons are found in the record of new tubes issued from the Montana division storehouse at Havre, Mont., since 1919, the most remote year of record. While these records are not confined to the new flues applied to engines of this division considered in this report, nor even to the Montana division engines only, and, furthermore, do not cover all of the flues applied to engines on the Montana division, they are said to represent the progressive condition at the shop on this division where a large part of the Montana division boiler work has been done and, particularly, where the number of engines handled over the period considered has not materially changed. As disclosed in the table the average number of 2-in. and 2¼-in. tubes issued per year for the five years preceding 1921 was 6,513 per year, as compared with only 2,081 per year during the last five years while the number of tubes issued per year has been decidedly on the decrease with only 723 tubes of 2-in. issued in 1925 as against 3,000 in 1921, and only 276, 2¼-in. tubes in 1925, as against 2,067 in 1921. The issues of 5½-in. superheater tubes were also less.

Though the Montana Division is only a small part of the system, it is also of interest that the flue purchases of the system averaged 20,919 per year from 1916 to 1921, as against 16,828 per year in the last five years.

Engine Failures Cut from 45 to 5

Further indications that improvements that have taken place in the last several years are shown by the engine failures on the Montana division since 1912 which are given in one of the tables. The number of engine failures, definitely and possibly attributable to water conditions in part or whole reached 45 per year in the period before water treatment, mounting as high as 104 in the

Engine Failures on Montana Division Associated with Water

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Failure to steam	4	3	1	..	1	12	..	..	..	.	.	.	.	.
Bursted flues	15	3	4	..	9	53	32	11	15	.	.	.	3	.
Flues leaking	24	26	22	5	9	26	7	6	1	1	2	2	1	2
Superheater flues burst	..	..	5	4	10	6	4	3	3	2	.	.	.	3
Superheater flues leaking	..	..	4	..	..	..	3	1	..	.	.	.	.	.
Foaming	1	2	1	2	4	2	2	..	..	.	.	.	.	.
Injector trouble	1	3	..	..	3	5	1	..	..	1	.	1	.	.
Steam pipes leaking	..	1	2	..	4	..	..	..	..	.	1	.	.	.
Firebox leaking	3	4	2	1	2	..	..	..	..	.	.	.	.	.
Leaking (not classified)	3	..	2	1	4	..	1	..	..	.	.	.	.	.
Total	51	42	43	13	46	104	50	21	19	4	3	3	4	5

second year of the first five years of water treatment, since which they have steadily and markedly decreased until in the last four years they have not exceeded 5 in number.

The conclusion from the above considerations is that a remarkable improvement in flue service and flue life in the last five years has occurred on the Montana division, an improvement which is also found in the case of other boiler work, such as boiler patching, flue sheet application and in the application of crown bolts, the substantial reduction of which in the last five years is evident from the most casual survey of the boiler work reports.

This improvement is attributed to the change in the method of treating the water. The same engines were employed in one period as in another. There have been no changes in the kind of flues used nor have appliances been added or other modifications made that could be considered curbs upon the pitting, unless it is the use on a few of the locomotives of 15,000-gal. tanks which enable these locomotives in some instances to pass up the worst waters. On the contrary, the trends in locomotive equipment and operation on the Montana division have been in the direction of increasing pitting if, as generally advanced, increases in boiler pressures and temperature, increases in the size of locomotives and greater train loads and speeds are factors in boiler pitting. This company has in late years resorted to the application of a cement

wash to pitting boiler sheets but the above survey has been confined entirely to tube conditions.

It is particularly to be observed that this company has abandoned certain water stations and also installed modern boiler washing systems at the two terminals in place of old hot water sumps in which the refill water had often been mixed with blow down water. The water at Innverness shown on the chart which, while not used in large quantities, carried 240 grains of alkali per gal. all the year, and the water at Saco, carrying as high as 140 grains per gal. of scale and as high as 138 grains per gal. of alkali salts before treatment when at its worst, undoubtedly contributed to the pitting before the abandonment of these stations in 1922. The water at Bowdoin, with 57 grains per gal, of scale and 148 grains of alkali before treatment, at seasons, also commands attention in this connection, particularly because it became a freight terminal in 1917. However, no passenger engines took water at this point from 1917 to 1922, when the old supply was abandoned, and throughout the above survey, the effects of the Bowdoin water and the other waters abandoned have been largely compensated for by considering a large variety of engines operating generally over the division. Thus the modifications in water treating methods by overdosing with soda ash and lime to produce a caustic alkalinity (Na OH) is properly credited for the most part with the improvement on this division.

Pitting Severe for Many Years

This road's struggle with the pitting problem began with the construction of its first water treating plant in 1912, when 10 plants were built for the treatment of every water supply on the main line from Devil's Lake, N. D., to Minot, a distance of 100 miles. When these plants were authorized, a venture in which James J. Hill himself was interested, it was with the hope that water treatment would stop leaking, put an end to foaming, to trains. These plants, like those on the Minot division, while costing less, were built along conspicuously practical lines. They were put in charge of men, moreover, who had no other duties and were supervised by traveling inspectors experienced in pump repairing and schooled in the rudiments of making tests of water. The treatment was with lime and soda ash in continuous type facilities where sufficient chemical was specified to reduce the scale forming matter in the water to a minimum without leaving excess chemicals in solution.

The inspection reports of this period, while disclosing the usual problems of adjustment of both men and facilities to conditions and particularly to the eccentricities of some waters (one of which could change 100 deg. in hardness in a day) show that by 1916 the irregularities in treating plant operations were fairly well-ironed out, and that with few exceptions goods results were obtained in getting the prescribed treatment. When, in 1917, two new terminals were built on this division, one at Wolf Point, Mont., and the other at Bowdoin, these were also equipped with water treating plants, with the result that treated water was available at all stations but Wiota, an emergency point on the main line, which was also equipped in 1920.

Better performance of power was a result of this work. Instances where troubles, both operating and shop, had been ameliorated were numerous. More dependable train service during severe winters appealed to local officers, while instances of foaming eventually proved submissive to preventive measures. But pitting showed no abatement. In 1919 water treatment was extended over 200 miles of branch lines on the Montana division, and also over 200 lines of main line extending from Great Falls to Billings, Mont., where the water at one point (Painted Robe) was so bad at seasons that the spout was removed from the tank to prevent enginemen from taking water and having subsequently to give up the engine. Early in

Consumption of Chemicals for all Water Treating

Year	1,000 gal. treated	Lime		Soda		Iron		Cost per M gal., cents
		Pounds	Cost	Pounds	Cost	Pounds	Cost	
	Before complete charge							
1918	1,326,845	4,474,304	$20,166	1,189,193	$22,151	1,567,986	$20.245	4.99
1919	1,232.418	4,476.732	27,630	1,205,755	28,473	1,197,913	16.090	6.17
1920	1,262,852	4,169,853	27,249	1,226,640	31,593	630,209	7,879	6.16
	After complete charge							
1921	977,577	3,433,243	22,920	1,574,493	33,461	203,981	2,450	6.24
1922	1,052.586	3,901,289	25,156	1,679,787	27,948	172,508	2,099	5.39
1923	1,199,832	4,087,274	25,996	1,677,054	27,874	147 050	1,794	5.04
1924	1,038.921	3,870,987	24,225	1,771,236	25,382	126,002	1,412	5.22
1925	1,121,680	4,356,607	26,474	2,278,291	31,445	91,722	1,066	5 63
Average	1918-1919	4,475,000	23,898	1,197,000	25.312	1,382.000	18,167	5.58
Average	1924-1925	4,113.797	25,349	2,024,763	28,413	108,862	1,239	5.42
Diff.	.....	—361,203	+1,451	+827,763	+3,101	—1,273,138	—16,928	—0.16

reduce fuel consumption and eliminate pitting. It was not long before these plants proved themselves equal to the solution of the leaking problem; the foaming that continued was accepted as a temporary problem of adjustment; the ability of water treatment to save fuel had already been proved in an experimental plant, and since pitting was practically a negligible quantity on this division for engines confined to it, there was no hesitancy about equipping the rest of the division, a hilly section between Minot, N. D., and Williston, with similar facilities on the following year. Pitting was more prevalent in this region but was still a question of minor importance with facilities that had hardly been placed in operation.

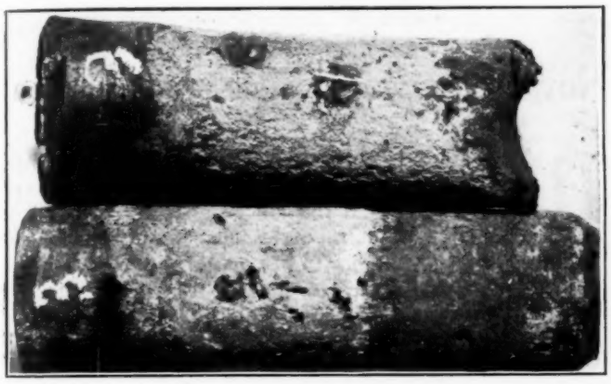
It was in 1915 that pitting revealed a tendency to become an issue. By this time water treatment had been extended along the Montana division until practically every water station from Devil's Lake, N. D., to Williston on the Minot division, and from Williston, N. D., west to Shelby, Mont., on the Montana division, a total distance of 650 miles, was equipped to provide treated water 1920 water treating was extended to 100 miles of line from Great Falls, Mont., to Shelby, so that by 1920 about 1,100 miles of line, including some of the worst water areas in the country, had been completely equipped with treating plants. By 1919, as a result of perfected supervision, the efficiency of the water treatment was everywhere of an exceptionally high order. Of special importance is the fact that locomotive boilers seldom secured water that did not show an alkaline reaction to test, a condition under which, according to the theories upon which these plants had been built, pitting was impossible.

Nevertheless in this treated water region, pitting showed no obvious signs of diminishing. On the contrary, it was charged by some that pitting had increased. At all events, the extent of it on the Montana division was a proper subject for consideration. It was seldom that tubes were removed without appreciable scrapping on account of pitting, and it was not at all uncommon when removing flues from engines after 18 months or less to find them pitted from one end to the other in a most

aggravated manner. Previously the division had suffered severely from leaking and from bursted flues, etc., but it was soon discovered that pitting must also be diminished before hindrances to train operations on this score could be avoided. Pitting was so extensive and aggravated on the Montana division in these five years of water treatment that some officers viewed it with alarm. Its expense was obvious.

Early Theories

There were many explanations of the trouble and its solution. The company was satisfied from the reports of its testing department that it was getting flues as free from impurities as it had been accustomed to get and experiments made with substitute materials and coatings had not as yet afforded sufficient promise of returns to induce their use on a large scale. The value of leaving



Two Sections of Boiler Tubes with Partial Grooving at the Ends

a coating of scale on the flues as a protection against pitting, moreover, was largely discredited by the practical problems involved, aside from the disclosures of cases of pitting under heavy scale.

An outstanding development of this period was the attributing of the pitting on the treated water territory to electric headlights on the theory that stray currents were reaching the tubes and corroding them when leaving the tube surfaces in the same way as water pipes, etc., have been found to corrode underground near poorly insulated power lines. The fact that electric headlights were introduced about the same time as the treating plants was thought to be significant for a time, but the theory was eventually discarded after discovering continued pitting in insulated engines and several instances of pitting in engines that had no electric headlights.

While the stray current theory was eventually exploded it had one important effect in that it aroused an interest in the question of conductivity in boiler waters and drew attention to sodium sulphate, (Na_2SO_4), a foaming salt, so called, which was present in quantities in all treated water. At the outset, however, these disclosures only complicated matters. Out of a confusion of theories, this salt was suspected of promoting pitting, if not grooving (which some were still ready to accept as the phenomenon independent of water). When, therefore, it was disclosed that the use of sulphate of iron administered as a coagulant produced this sodium salt when added to the water, it was thought that the elimination of sulphate of iron would cure the trouble. By order of the management all sulphate of iron treatment was discontinued, until it was learned that even when granting all claims concerning the corrosibility of water containing sodium sulphate, iron sulphate with few exceptions could at best only contribute to the corrosibility of the water in view of the small proportion of sodium sulphate produced by it in relation to that present naturally in these waters or resulting from other stages of the treating process, and until it was also learned that under the conditions then existing at least, its continued value as a coagulating agent offset the ill-effects charged against it. The trend of the whole situation, however, was forward. The insufficiency to the occasion of early dogmas created a condition receptive to lines of thought that seemed quite irreconcilable a few years before and an appetite was shown for further information on the subject.

University Experiments Throw Light on Problem

It was approximately at this juncture that arrangements were made for a special investigation of the problem in the laboratories of the Montana State College at Bozeman, Mont. It was the aim of this investigation to verify the claim that corrosion is an electro-chemical action, and among other things to observe the effect of minerals in water and to investigate water treatment as a solution of the problem. The actual process of the investigation, which occupied the month of December, 1919, was more direct than various investigations that had then come to light. It involved the setting up of a wet battery by taking an ordinary gallon jar such as signal men use, and employing various materials for electrodes, depending upon the nature of the experiment. Thus in one experiment a bar of steel cut from boiler plate was connected to a bar of copper, while in other cases a piece of ordinary iron wire was used. The solutions were also varied, some consisting of distilled water to which various chemicals were added, while in other cases the solution was formed of the treated or untreated water taken from one or more water stations. To measure the electric currents an instrument was used that was so delicate that not only would a current of measurable dimensions be registered when two pieces of iron from the same piece of boiler plate were immersed in distilled water, but a difference between the currents produced by a straight wire in distilled water and that produced by the same wire after bending would also be registered.

The disclosures of these experiments were generally three in number. In the first place it was found that four electrodes made from the same piece of boiler plate produced different currents when immersed in the same solution, thus illustrating how imperfections or other differences in flues or boiler metal can promote electrolytic action if these differences are sufficiently intensified and exposed to active solutions. In the second place, it was found that with all other conditions remaining the same, successive increases in the amount of current flowing were produced by dissolving sodium sulphate (the foaming salt mentioned above) or sodium chloride (common table salt which is present in any of the waters) in the water, while in the case of caustic soda (Na OH) and carbonate of soda (Na_2CO_3) this was only true up to a relatively low concentration, after which no increase occurred. Again these tests indicated that, with all other conditions the same, certain of the waters taken from the treating plants were far more productive of current than was distilled water or that containing caustic soda, and related substances, and particularly that current produced with water containing sodium sulphate or sodium chloride was reduced on adding this caustic or carbonate of soda. The investigation was productive of information so harmonizing with information gained from other causes, that programs already in their inception or in contemplation on the Great Northern were carried forward.

At practically all points sulphate of iron was used as one of the re-agents. In most cases it was the practice to use

about one pound of this chemical for each 1,000 gal. of water treated, principally for assisting the settlement of precipitates. But there were several points where large quantities of this chemical were used solely to convert to sodium sulphate that caustic produced by the softening action of lime on a naturally alkaline water, a procedure which the investigations showed to be at least unnecessary, if not harmful, and in consequence this use of iron was eliminated, and its use was reduced at all points to the lowest quantity consistent with proper coagulation.

The second and principal step was to give all boiler waters a high concentration of caustic soda by overdosing at the treating plant. The hazard in this practice was that of reviving foaming, and caution was therefore exercised in undertaking the work. The first experiment of consequence with locomotives in this direction was carried out on the branch line extending from Bainville, Mont., north to Scobey, a distance of 100 miles. In general these waters were all naturally alkaline (carrying a winter average of 25 grains of scale and 50 grains of alkali per gal.), and instead of requiring overdosage to produce the caustic condition, were, in general, rendered so simply by eliminating the use of the coagulant. Not only was it found that this water was being carried in locomotives as readily as was the water in its former condition. but it was also observed that engine 755, which had new flues applied in February, 1920, was developing no pitting. These experiences were encouraging and overdosage was soon extended generally over all treated water divisions.

Water treatment during the last five years, therefore, differed from that of the previous five years in that all waters were rendered strongly alkaline with caustic soda, the actual quantity of which is about 10 grains per gallon at the treating plant, whereas in the five years preceding only sufficient alkalinity was prescribed to insure that the process of softening had been accomplished.

The only problem in connection with this overdosage of chemical apparently has been one of keeping boilers from foaming, but it has been found that, with the better softening and settling of many treated waters which results from excess treatment, and with the aid of anti-foaming compound (though no more than it was the practice to use before), boilers are regularly operated without trouble though charged with from 400 to 700 grains per gallon of so-called foaming salts, a condition which tends to strengthen the belief in many quarters that foaming is more largely a function of the amount of suspended matter or other debris allowed to accumulate in the boiler than of matter in solution. At all events, it is evident from the continued treatment of this character over a period of five years that foaming is not a serious problem. The tonnage handled per train over this division now averages 2,300, as compared with 1,800 in 1915 and 1916, while the Mikados regularly haul 4,000-ton trains over an engine district of 203 miles with almost no 16-hour tieups.

In this connection it is of interest that on August 14, 1924, when this study was inaugurated, the Montana division established the divisional record for handling two silk trains which this road hauled from the coast to St. Paul in unprecedented time, the trains being carried over the 203 miles from Havre to Wolf Point on the Montana division at speeds of 58.1 miles per hour and 54 miles per hour including stops, during which treated water of high caustic alkalinity was used.

As a further indication of the satisfactory performance of engines over this district with highly alkaline water attention is also called to the recent run in which Engine 2517 with a train, traveled the entire distance from Seattle, Wash., to St. Paul, and return, a total distance of 3,462 miles. In this run no compound was used from Seattle to Havre, which includes 150 miles of the treated water district, while at Havre, anti-foam compound was supplied for use at the rate of one pint to 8,000 gal. of water at each tender filling, with which the engine operated the entire distance to St. Paul without trouble.

The table on the consumption of chemicals discloses that the overdosage of the last five years has resulted in a substantial increase in the amount of soda ash used, the increase of the last two years being 827,763 lb. per year for all treating plants on the system as compared with the amount used in 1918 and 1919 for approximately the same quantity of water. But it is interesting to note that about $17,000 a year has been saved by eliminating or reducing, as the case might be, the use of sulphate of iron, which has had the net result of decreasing the total cost of chemicals for water treatment now $12,500 per year as compared with the cost in 1918 and 1919.

New Gooding Bills Introduced

WASHINGTON, D. C.

PROMPTLY after the defeat of his long and short haul bill in the Senate on March 24 Senator Gooding on March 26 introduced another, S. 3720, to prohibit fourth section relief to meet water competition through the Panama canal, whereas the defeated bill applied to rates to meet water competition in general. The new bill is exactly the same as the other except that the words "through the Panama canal" are inserted. It is understood that he may try to have the bill added as a "rider" to an appropriation bill.

Senator Gooding also introduced another bill to define the words "reasonably compensatory" as used in section 4, which now provides that, in exercising the authority conferred upon it to authorize fourth section relief, the commission shall not permit the establishment of any charge to or from the more distant points "that is not reasonably compensatory for the service performed." The commission has interpreted these words to mean that a rate properly so described "must cover and more than cover the extra or additional expense incurred in handling the traffic to which it applies." Senator Cummins says he intended the words to mean "fully compensatory" and the difference has been one of the chief grounds for criticism of the commission by the Gooding bill advocates. The new bill provides that the words "reasonably compensatory" shall be construed to mean "the same as 'compensation' was defined by the Interstate Commerce Commission in Morgan Grain Company versus Atlantic Coast Line Railroad Company, Nineteenth Interstate Commerce Commission, pages 460 to 470, wherein the commission quoted the words of Mr. Justice Brewer as follows: 'Compensation implies three things—payment of cost of service, interest on bonds, and then some dividends.'" Nothing is said in the bill about guaranteeing the dividends even if the rates so made should take some traffic away from the water lines.

Following is a list of the 33 senators who voted on March 24 for the Gooding long and short haul bill, which was defeated by a vote of 46 against it:

Ashurst, Ariz.; Blease, S. C.; Borah, Idaho; Bratton, N. M.; Brookhart, Ia.; Broussard, Ga.; Cameron, Ariz.; Capper, Kans.; Caraway, Ark.; Couzens, Mich.; Frazier, N. D.; Gooding, Idaho; Harreld, Okla.; Howell, Neb.; Johnson, Calif.; Jones, N. Mex.; Kendrick, Wyo.; King, Utah; La Follette, Wis.; Norris, Neb.; Nye, N. D.; Oddie, Neb.; Pine, Okla.; Pittman, Nev.; Ransdell, La.; Reed, Pa.; Robinson, Ark.; Sheppard, Tex.; Smoot, Utah; Stephens, Miss.; Wadsworth, N. Y.; Walsh, Mont.; Wheeler, Mont.

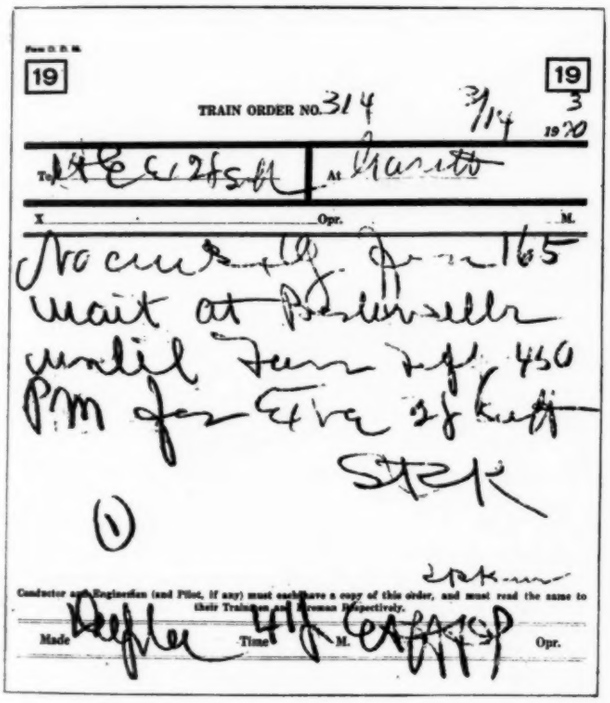
Train Movements Directed by Signal Indication*

Comparison of time and space interval methods—Early developments of block signals and present day uses discussed

By H. M. Sperry

Consulting Signal Engineer, New York

THE efficiency of train operation depends upon several factors, the most important of these being: Adequate and properly maintained trackage and terminals; properly maintained locomotives and cars; and a system of directing train movements that will insure the maximum utilization of track and equipment capacity and the maximum output of train miles in a unit of time. The prime purpose of a system of train direction



An Illegible Train Order

is to keep trains in motion. This paper is to deal primarily with the relation between modern signaling and train service efficiency under present-day conditions. Inasmuch, however, as present practice is the result of nearly a century of evolution, some attention will be given to the outstanding historical facts connected with the development of train movement direction.

These methods from the beginning of steam transportation have been based upon one or the other or both of two definite principles—(1) the time interval, and (2) the space interval. In the earlier days general practice favored the time interval, but under modern conditions the space interval, under signal indication, is universally recognized as the method which insures the maximum of train production with the minimum of train delay, risk, and expense. With the time interval method train movements are directed by time-tables, train orders and train dispatching. Prior to the electric telegraph the time-table was the sole authority for train movements and serious delays were often unavoidable. The Morse electric telegraph came into use in 1844 and seven years later it was first used in train operation for the sending of train orders.

Growth and Present Day Volume of Train Orders

With the first train order came telegraphic train dispatching which offered an effective means for reducing the delays incident to operation under time-tables. Time-tables make no provision for the prompt movement of delayed trains or for the running of extra trains. A description of the first train order, in Mott's History of the Erie Railroad, explains how train dispatching came into use.

"To Charles Minot belongs the honor of having made the first practical application of the Morse telegraph to railroading, either in this or any other country, when in the early autumn of 1851 he successfully ran a train by a telegraph order for a distance of 14 miles on the Erie."

Superintendent Minot was our first train dispatcher. Today there is a force of 5,400 train dispatchers and, in addition, 59,600 other employees wholly or partially employed in supervising and directing the movement of trains. Their total wages in 1925 were $122,000,000.

Two forms of train orders are in use, form "31" and form "19." The rules require that form "31" shall be receipted for in writing by the conductor of the train addressed. Form "19" is receipted for by the station operator, who is held responsible for the delivery of the order to the conductor and engineman of the train addressed. Because of this difference in delivery, a moving train is required to stop for a "31" order, but need only slacken speed for a "19" order. If the order should authorize the train to continue its journey, then the delivery of the "31" order, requiring the train to stop, causes a useless delay that might have been avoided by the use of the "19" order.

When Superintendent Minot, in his effort to keep trains moving, issued his first train order he probably did not dream of the magnitude of the effort that must be made today. It is estimated that no less than 130,000 train orders are issued daily, or a total of over 47,000,000 orders a year. As practically all train orders are issued in duplicate, the total number delivered to trains is nearly 95,000,000 orders. This is a conservative figure

*Abstract of paper presented before the Pittsburgh Railway Club, Pittsburgh, Pa., on March 25, 1926.

as sometimes even three or more copies of an order are delivered.

Space Interval Gives More Adequate Protection Than a Time Interval

With the space interval method, train movements are directed, as in the time interval method, by time-tables, train orders and train dispatching, and in addition by block signals. Block signals are for the purpose of reducing the hazards of train operation by maintaining a space interval between trains. Space between trains spells safety from collision.

In the time interval method the effort to maintain a space interval by requiring trains to run at least 5 or 10 min. apart too often fails of its purpose. It is practically impossible always to maintain under any *time* interval method a *space* interval between trains running at different speeds. For example, trains may be scheduled to move on 10-min. intervals, but unless these trains are kept moving at the same speed the 10-min. margin may be reduced to zero. Should the margin be reduced by one of the trains stopping, entire dependence for protection against collision is placed upon the vigilance of the engineman of an approaching train and upon the alertness of the flagman of the stopping train. In the space interval, or block signal system, space is maintained between trains by dividing the road into sections with fixed signals to govern the movement from section to section.

Block Signals Used in America 90 Years Ago

The following abstract from a paper on "Signals" by J. Elfreth Watkins of the Pennsylvania, presented in 1899, shows that the value of maintaining the space interval between trains was recognized over 90 years ago:

"Although the block system of signals is generally believed to be of English origin, it is a matter of record that it was in use on an American railroad, now forming a part of the Pennsylvania in 1832. Soon after the New Castle & Frenchtown Railroad was opened for steam traffic the necessity for establishing a system of signals became apparent. Poles 35 ft. high were located about three miles apart, and when the train started from either end the flagman at the terminal station hoisted a white flag to the top of the pole. The flagman at the second station, whose duty it was to look through a nautical telescope every few minutes during the day, hoisted his flag to a point a few feet from the top of the pole. The remaining flagmen followed his example so that at New Castle it was known that the train had started from Frenchtown within a few minutes after it had left that station and each flagman was able to note its passage through each "block." When for any reason the locomotive became disabled, or the train was delayed by other circumstances, a black flag instead of a white flag was hoisted. This method of block signaling proved so satisfactory that flags after a time were dispensed with and bell-shaped signals, consisting of peach baskets covered with colored cloth, were used."

Block System as Used in Delaware in 1832

This crude block system, put in use 12 years before the advent of the electric telegraph in America, had many of the features of present day signaling. The division of the road into block sections with fixed signals governing the entrance to each section corresponds with present day practice. The first complete block signal system in the United States was established in 1863 on the railway between Philadelphia, Pa., and Trenton, N. J., now a part of the Pennsylvania, to provide for a heavy movement of trains carrying troops during the Civil War.

Why the Time Interval Fails to Give Full Protection

The following brief accounts of three collisions due to a misunderstanding of written instructions serve to emphasize the importance of providing a check against the possibilities for error.

The first case illustrates the fact that the ever-present danger of misunderstanding the meaning of the train order is an inherent defect in the method of directing train movements by written instructions. It is a startling example of a misunderstood order resulting in a collision between a northbound passenger and a southbound freight train on a single-track road about six years ago. Ten persons were killed and 32 injured. The order was misunderstood because the name of the station where the trains were to meet was written so carelessly as to be misleading.

But no matter how plainly a train order may be written, the chance for a misunderstanding may still exist. This is illustrated by a serious head-end collision that occurred last year between two passenger trains. The collision occurred on a single-track line operated by time-table and train orders, no block signal system being in use. The order that was misunderstood read as follows:

"Order No. 137.
First No. 82 meet No. 89 on double track at U——."

The engineman of Train No. 89 stated that he read the orders to the conductor while the wind was blowing considerably and that in holding train order No. 137 his thumb covered the word "first" in the order and he read it as:

"No. 82 meet No. 89 on double track at U——."

Because of this misunderstanding, after first No. 82 passed, train No. 89 departed from S—— and about three miles beyond collided with second No. 82. One person was killed and 31 were injured.

These two cases illustrate but do not exhaust the possibilities for grave errors in the use of written instructions for directing train movements. The possibilities include not only the misunderstood order, but also the order that is forgotten and the order that is overlooked. Thus, my third illustration describes how an overlooked order caused a head-end collision between two passenger trains. The collision occurred on a single track line operated by time-tables and train orders. No block signal system was in use. In this case three orders were issued, together with a clearance card stating that there were three, and were delivered in duplicate to the conductor of the south-bound passenger train, who in turn delivered one set to the engineman.

After the collision the engineman stated that he read the clearance card and *two* of the orders. About this time the engineman received a proceed signal, put the orders in his pocket and started. The engineman also stated that when he read the clearance card, he did not have on his glasses, and while the figure on the clear-

ance card showing the number of orders was a plain "3," he said he must have read it for a "2," and that he did not check the orders against the clearance card as the rules require.

These three collisions under the time interval method illustrate the danger in directing train movements by papers bearing written or printed instructions which may be forgotten and overlooked, and, in which a word misread may completely change the meaning.

The space interval method, on the other hand, through the use of block signals, provides an effective check


(No. 736. Page 88).

NEWCASTLE AND FRENCHTOWN

RAIL-ROAD.

PASSENGER CARS,

PROPELLED BY A LOCOMOTIVE ENGINE,

Leaves the *Depot*, at NEW CASTLE, *for* FRENCHTOWN,

EVERY MORNING,

Upon the arrival of the Steam-boat from Philadelphia, at about

Half Past Eight o'clock,

RETURNING

Leaves Frenchtown at about Half-Past Ten o'clock.

ANOTHER TRAIN OF

PASSENGER CARS

Departs from New Castle for Frenchtown, every evening, (except Sunday,) upon the arrival of the AFTERNOON BOAT, *from* Philadelphia, at about Six o'clock, and on return arrives about Nine o'clock.

Fare over the Road . . . . . 50 cents.
Do. for excursion over the road and back . . 50 cents.

R. H. BARR, *Agt.*

New Castle, June 1st, 1833.

New Castle & Frenchtown Poster, A. D. 1833

against this class of errors. In the three cases cited the engineman would have had his error brought to his attention, not by a collision with an opposing train, but by the indication of a signal giving him ample warning of danger ahead. In the time interval method, as previously stated, the movement of trains not provided for in the time-table is directed by train orders. In the space interval method, although train orders are also used extensively, the standard code rules provide that block signals may be used in place of train orders.

Space Interval Permits Movement in Either Direction on All Tracks

The movement of trains by block signals on two or more tracks *with* the current of traffic is in general use. Train movement *against* the current of traffic, that is, in either direction on one or more tracks of a multiple-track road, is in use on a number of heavy traffic roads. This method of directing the movement of trains by signal indication without train orders eliminates the unavoidable delays of the written train orders, and makes the operation of trains at maximum track capacity possible.

The economic advantages of the space interval method, particularly for operation *with* the current of traffic, are fully appreciated, and increasing consideration is now being given to a more intensive use of track facilities by train operation by signal indication in either direction on one or more tracks of multiple-track roads. Either-direction operation first came into use as a means to increase the track capacity of double-track roads, by adding a third track and operating the middle of the three in either direction. The following is a brief summary of what has been done:

The Chicago, Burlington & Quincy was one of the first railroads to operate three tracks in this way, this practice being applied to a 14-mile section of the main line near Chicago in 1888. At present the main line from Chicago west to Galesburg, Ill., consists of 119 miles of double track and 44 miles of three tracks, or a total of 163 road miles. Both tracks of the double track and the middle track of the three tracks are signaled for operation in *either* direction.

The Baltimore & Ohio put a 36-mile section of three tracks in service in 1911 with the middle track operated in either direction by signal indication. Operation during the past 15 years has proved so satisfactory that the construction of a fourth track has not yet been found necessary.

The Pennsylvania Railroad had to meet a difficult situation on the section between Spruce Creek, Pa., and Tyrone Forge, where the road follows the Juniata river which it crosses 17 times in a distance of 7 miles. On account of the heavy cost of construction, this portion of the line has only three tracks, whereas the rest of the division has four tracks. To provide for an increasing traffic in 1913 the middle track in this three-track section was signaled for operation in either direction, and in consequence the construction of a fourth track has not yet been found necessary.

The Illinois Central, in 1925, put a 25-mile section of three tracks in service near Chicago with the middle track operated in either direction by signal indication.

The Delaware, Lackawanna & Western moves a heavy suburban traffic over its line between Hoboken, N. J., and Millburn, and has three tracks for 15 miles between West End Junction (two miles from Hoboken) and Millburn. In 1922 either-direction operation was put into use on the middle track for this 15 miles and on the north track for 4 miles. This arrangement provides a track capacity nearly equal to that of four tracks, for in the morning rush hours trains to New York use two tracks for 11 miles and three tracks for 4 miles. In the evening rush hours trains from New York use two tracks for the entire distance.

The Chesapeake & Ohio, at West Ashland, Ky., put a three-track section, 3.3 miles in length into operation in 1925. This is the last word in three-track operation, as all three of the tracks are operated in either direction by signal indication.

Next in order is the operation in either direction of *both* tracks of double-track roads by signal indication. The most notable example of this is the double-track section of 119 miles on the Chicago, Burlington & Quincy, described previously. Both tracks are provided with automatic block signals for operation in either direction. Fast trains may easily run around slow moving trains. Other notable installations are as follows: Chesapeake & Ohio, six double-track sections with a total length of 40 miles; Illinois Central, a 20-mile section adjacent to its three-track section; Pennsylvania, the line between New York and Manhattan Junction.

eight miles and a double-track section on the Tyrone division of five miles. Either-direction operation on double tracks by train orders is not included in this record. In certain situations on four-track roads, traffic has taxed the capacity of the four tracks to a point where it has been necessary to operate one or all of the four tracks in either direction. On the Pennsylvania, between South Fork, Pa., and Sheridan, westward Track No. 3 of the four tracks is operated for a distance of 11 miles in either direction by signal indication.

The New York Central and the New York, New Haven & Hartford enter New York over a four-track line, five miles long. Heavy traffic indicated the need of additional trackage, but the heavy cost of this was avoided by obtaining a greater use of the existing tracks in 1924, by providing for the use of the westerly track of the four tracks for movements in either direction by signal indication.

The New York, New Haven & Hartford main lines from the north and northeast enter the station at New Haven, Conn., through a cut only wide enough for four tracks which handle 296 trains a day. The two center tracks are now operated in either direction for a distance of one mile by signal indication. At Jersey City, N. J., the Erie has a four-track approach to the station for a distance of two miles, on which all tracks are arranged for either-direction operation by signal indication.

Direction of Train Movements by Signal Indication Without Written Train Orders

Train operation on single track by signal indication is not new as that method was put into successful use in 1882 on the Pennsylvania at Louisville, Ky., for handling the trains of four roads over the Ohio river bridge which was then a single-track structure. The trains in and out of Louisville over the bridge totaled over 150 a day and to direct train movements by time-tables and train orders was difficult, if not impossible, because, standard time had not come to use and each road had a different time standard. The difficulties of the situation brought the space interval method into use; six manual block sections were established on the 5½ miles of single track and 2½ miles of double track covering the bridge and the tracks approaching it. At present the territory controlled by the signals at Louisville handles a daily movement of 325 to 350 trains. The successful operation of the system for nearly half a century has, no doubt, been due to the fact that trains are operated by block signals.

Another early installation of train operation by signal indication was made in 1889 on the Nashville, Chattanooga & St. Louis in the vicinity of Chattanooga, Tenn. The system covered 4.4 miles of single track and 1.6 miles of double track, divided into three manual block sections, all under the control of the dispatcher at Chattanooga. In addition to making a 100 per cent safety record, the system should have credit for having postponed the construction of a second track, thus saving the interest on the cost and the maintenance charges on the up-keep of a second track for 24 years.

The third installation was made in 1907 on 8.6 miles of single track on the Pennsylvania in the vicinity of Huntley, Pa. The controlled-manual block system was installed, the signals being controlled by track circuits and by the operators. This installation is still in use with an average daily traffic of 42 trains.

The fourth installation, made in 1909 on the Central New England between Highland, N. Y., and Maybrook, was notable as it relieved a traffic congestion which at times taxed the train dispatchers to the utmost. The installation covered 13.2 miles of single track and 7 miles of double track, divided into nine controlled-manual block sections. Trains were moved by signal indication without train orders.

The fifth installation, the second on the Nashville, Chattanooga & St. Louis, was between Cowan, Tenn., and Sherwood. The installation covered 11 miles of single track, divided into four controlled-manual block sections with an average daily movement of 34 trains. As no less than 50 train orders per day were eliminated by operation by signals, the delays incidental to operation by train orders were reduced.

The sixth installation, made in 1919 on the Chesapeake & Ohio between Cotton Hill, W. Va., and Cauley, covers four miles of single track, divided into three controlled-manual block sections.

The seventh installation was made in 1925 on the Missouri Pacific in the vicinity of Kansas City, Mo., and covers 56 miles of single track with 14 passing sidings. Train movements are directed entirely by signal indication under a controlled-manual block system with automatic train control.

No claim is made that the results accomplished, in the cases cited, were entirely due to the signaling, as many factors usually enter into any improvement in train operation. This is particularly so on single track where coincident with signaling provision is made for better siding facilities and the operation of siding switches.

Summary

The inherent defects in any time interval method and the value of the space interval method are evident, as are also the marked advantages of substituting signal indication for the train order in directing the movement of trains. Efficient transportation is largely dependent upon an efficient direction of train movements and much depends upon the kind of instructions used in directing train movements. Train orders are *written* instructions and must be delivered to the conductor and engineman of the train. They must be correctly prepared, carefully transmitted, and faithfully delivered. Above all, they must be uniformly understood by all concerned, and must not be forgotten. On railroads *not* equipped with block signals, safety of operation depends entirely upon the human element.

Signal indications are instructions given by the aspects of fixed wayside signals. Instructions given by signal indications require less effort in preparation and transmittal than do written instructions. They are delivered to the engineman from block to block through the medium of the signal. The language of the signal is easy to understand and difficult to forget. The signal aspects are few in number and may be regarded as instructions reduced to the minimum in standard form, and hence, there is little opportunity for misunderstanding. The instructions conveyed by the signals are given at the point where they are to be executed and there is no lapse of time in which to forget them.

In conclusion, the case of signal indication versus the train order as the method for directing train movements may be briefly summarized in three points: (1) The science of signaling has now developed far beyond the stage of experiment. Abundant experience has proved that directing train movements by fixed wayside signals is both practical and efficient. (2) The construction, maintenance and operation of a signal system for directing train movements by signal indication can all be carried out by methods that have stood the test of time. (3) Experience in every case has shown substantial economic advantages, an increase in safety, a reduction in train delays, an increase in ton miles per train hour and a decrease in total ton-mile cost.

J. B. Hill Elected President of N. C. & St. L.

Former treasurer and assistant to president succeeds W. R. Cole—Rise in recent years rapid

JAMES BRENTS HILL was elected president of the Nashville, Chattanooga & St. Louis at a called meeting of the board of directors in Nashville, Tenn., on March 22. Mr. Hill was formerly treasurer and assistant to the president. He succeeds W. R. Cole, who had been elected president of the Louisville & Nashville the previous week.

Mr. Hill's promotion was "no surprise to anyone on the N. C. & St. L.," to use the words of one of his associates in that company. It had been felt for several years that if opportunity ever offered he would become president of the road, said this officer, and the opportunity simply presented itself sooner than anyone had expected. Mr. Hill is simple, friendly, unassuming and modest almost to a fault. Railroading has always been his enthralling interest. He has been a consistent student of the business and has maintained a close contact with all its developments. He has been described by those who know him as a man of fine ability, sound judgment, and clear and direct thought.

James B. Hill

Mr. Hill's rise in the last four years has been extremely rapid. As recently as 1922 he was chief clerk in the executive department of the N. C. & St. L. The years that he has spent in railway work—and incidentally all of them have been with that property—coupled with his close application and hard study of the general problems of railroading have equipped him for the much more responsible duties that have been so recently assigned to him. It is said of Mr. Hill that no man on the N. C. & St. L. has a broader or more detailed knowledge of that property.

The N. C. & St. L. is a road of excellent earning power. Its net income has been consistently large in every year except 1921 when a net deficit was incurred. Net operating income in 1925 was $4,624,715, an increase of $504,038 over the net operating income in 1924 which was $4,120,677. The income record of the N. C. & St. L. last year was the best in any year since 1917. It is estimated that the net income earned last year equalled approximately $15 per share on the $16,000,000 outstanding capital stock, compared with $12.22 per share earned in 1924 and $10.18 per share in 1923. The present dividend rate of 7 per cent has been maintained since 1917. Previously the rate had fluctuated between 5 and 6½ per cent. The N. C. & St. L. is controlled by the Louisville & Nashville which owns approximately $12,000,000 of the $16,000,000 capital stock.

Although its operating ratio, 82.5 per cent in 1924, is somewhat higher than those of some of its neighbor roads, the N. C. & St. L. has the reputation of being a well operated property. It has been a pioneer in the operation of trains by "19" orders and has made some remarkable records for expeditious movement of trains, particularly the fruit specials operated between Atlanta and Nashville. The section of the line between Atlanta and Chattanooga is considered one of the busiest stretches of single track in the southeast. In addition to the six passenger trains operated over this section of the line each way daily, there is usually a movement of about twice as many freight trains.

The progressive attitude of the management of the N. C. & St. L. has been shown quite recently in the announcement of plans for the substitution of motor bus service for local passenger train service at many points on the line where passenger train operation has become unprofitable and the condition of roads makes the substitution of buses possible. This important new development in the road's activities is expected to engage Mr. Hill's close attention.

James Brent Hill was born on November 14, 1878, at Spencer, Tenn., and graduated from the George Peabody College for Teachers at Nashville, Tenn., in June, 1898. Previous to that time he had had his first railroad experience as a relief operator on the N. C. & St. L. at Bon Air, Tenn. After his years at college Mr. Hill returned to railway service in August, 1898, as a clerk and operator on the N. C. & St. L. at Sparta, Tenn. He later served as clerk and stenographer in various division offices and in 1903 was transferred as a clerk to the office of the secretary and treasurer. Mr. Hill was promoted to transfer agent and assistant secretary in 1915 and three years later was promoted to chief clerk to the federal manager of the N. C. & St. L., the Tennessee Central and the Birmingham & Northwestern. Upon the termination of federal control on March 1, 1920, he was appointed transfer agent, assistant secretary and chief clerk to the presi-

dent of the N. C. & St. L., being promoted to treasurer and assistant to the president in April, 1922. His next promotion came in his recent election to the presidency.

St. Paul Situation Considered By Senate Committee

WASHINGTON, D. C.

CHARGES by Senator Gooding and others relating to an alleged "conspiracy" to "wreck" the Chicago, Milwaukee & St. Paul, were denied by J. J. Hanauer, of Kuhn, Loeb & Co., at a hearing before the Senate committee on interstate commerce on March 25 on the bill introduced by Senator Gooding to provide for a refunding of railway indebtedness to the government at a reduced rate of interest. Mr. Hanauer and Pierpont V. Davis of the National City Company appeared at the request of the committee to explain that if the St. Paul indebtedness of $55,000,000 is refunded under the provisions of the bill the benefits will go largely toward reducing the proposed assessment on the stockholders, instead of to New York bankers, as some of the senators professed to fear. After outlining step by step the events and causes which led to the St. Paul receivership Mr. Hanauer said that the question whether the bill passes or not will make no difference in the fees to be received by his company or in the reorganization expenses but that a refunding of the indebtedness would probably remove the necessity for an underwriting from which his company might make some money. He strongly urged the passage of the bill, in the interest not only of the St. Paul situation but for the benefit of other roads.

Referring to the charge of "wrecking" he pointed to the list of strong roads which he said had been "set on their feet" in the past by Kuhn, Loeb & Co., and said that "if that is the kind of wrecking referred to the St. Paul stockholders are lucky that we are going to do the wrecking" and that "when the plan of reorganization goes through the St. Paul will have the strongest financial structure of any railroad in the country."

He said that Kuhn, Loeb & Co. had not been on the board of directors of the road and had had nothing to do with its operation; that they had sought to avoid a receivership, but that its financial structure is "top-heavy" and when it appeared that an extension of the bonds that matured last June would not have solved the problem and that the St. Paul could not go on and serve the public properly without a receivership "there was no question about it," a receivership was the only way to safeguard all interests and put the company on its feet.

In February, 1925, he said, Kuhn, Loeb & Co. learned from President Byram and from Coverdale & Colpitts that an extension of the maturities would not meet the company's problem. It faced increased fixed charges; the year 1925 showed a deficit of over $4,000,000, and it would have had to raise some $20,000,000 to make the expenditures which have been made under the receivership and which were made possible because the receivers did not have to pay interest. It was evident, he said, that the company could not pay its fixed charges, to say nothing of having the credit to raise new capital. A voluntary receivership was considered but when counsel advised that the company could not pay the interest due on April 1, knowing it could not pay the principal of the bonds at their maturity in June, the receivership was brought on on March 18. The purpose then was to so reorganize the company as to make it one of the strongest in the country and able to finance itself cheaply. The first problem was to liquidate the government debt of $55,000,000 and it was necessary to raise about $70,000,000. The actual net assessment against the stockholders is only about $4 a share, he said, because they are to be given "perfectly good" 5 per cent bonds, ahead of the income bonds, which can be sold immediately at 80 and in time should be worth par, while the bondholders are to be given income bonds for 75 years. He submitted a detailed estimate of the reorganization expenses, amounting to from $4,950,000 to possibly $6,495,000, saying that this is less than the increased interest charge if the maturities had been extended in June, 1925. The fee of the reorganization managers, he said, is $1,044,000, 25 cents for each $100 of bonds and 20 cents for each share, or "less than the fluctuation in many an hour on the exchange." If Congress passes the interest bill, Mr. Hanauer said, "we can almost definitely say that there will be no necessity for any underwriting at all" and the amount to be raised by the stockholders would be reduced to about $20,000,000.

When Senator Couzens asked if any assessment would be necessary he replied that it would not only be necessary but that the law requires it if the bondholders are required to make sacrifices. The stockholders are asked to maintain their relationship as an inducement to the bondholders not to take the property away from them, as would be done under a real estate mortgage. He urged that a 40-year refunding be permitted, saying that this would make the sinking fund charge 1 per cent, whereas a 30-year period would increase the sinking fund charge and place an additional charge ahead of the bondholders. He said the plan of reorganization is the "soundest that could be devised." When Senator Couzens asked what had caused all the opposition to it he said that the principal opposition, that of the Roosevelt firm, had been based on the idea that the situation could be corrected by an advance in freight rates, whereas he had thought that progress with the reorganization ought to be made while waiting for an increase in rates, and that this firm has now approved the plan. This plan, he said, has met with much less opposition than many others and the only outstanding opposition now is that of the Jamison committee. This committee, he said, represents fire insurance companies that are less particular about the securities they buy than the life insurance companies are required to be. He did not know just what their opposition was based on, he said, but they wanted to set the company up "on a weak basis."

Senators Gooding and Couzens asked for an opportunity to question the witness further at a later hearing. Senator Gooding said that unless the charges of conspiracy are cleared up the bill cannot pass the Senate but he did not argue with the witness except on the statement that the Northwestern railroads are not prosperous. Mr. Davis said that the reduction in rates made by the Interstate Commerce Commission in 1921 and 1922 had amounted to as much for the St. Paul as its fixed charges for a year and that the freight traffic density of the Northwestern roads had been reduced 3 per cent since 1916.

Chairman Eastman and Commissioner Cox of the Interstate Commerce Commission told the committee on March 31 that the commission has been making and proposes to make a most thorough and complete investigation of the Chicago, Milwaukee & St. Paul situation, that the enormous mass of information which it has collected will be introduced when hearings are resumed, probably on April 7 in New York, and that Walter L. Fisher, of Chicago, formerly Secretary of the Interior, has been retained as special counsel to assist the commission in its investigation. Chairman Eastman also said that the commission would not want to pass on a St. Paul reorganization until after it had completed the investigation, but that any action on the interest bill, which affects a large number of other

roads, ought not be postponed because of any reference to the St. Paul situation. Mr. Eastman also quoted from a letter which the commission had addressed to the House committee on interstate and foreign commerce, expressing general approval of the bill to reduce the interest rate and refund railroad indebtedness to the government, but with a suggestion that each case be treated on its merits and that possibly the certificate of the commission should be required that the reduction and refunding would enable or assist the carrier properly to meet the needs of the public.

As a result of the two statements, Senator Gooding said he was satisfied that the commission is making a thorough investigation and that he would not press his resolution providing for an investigation by a select committee of Senators.

Chairman Eastman said the commission had undertaken its investigation with a view to informing itself and aiding it in passing on future financing of the road, including a reorganization plan, and also with a view to possible recommendations to Congress as to legislation. It had organized a force of accountants, of which from 17 to 26 have been constantly at work ever since on the St. Paul records, engineers from its various bureaus had been assigned to the work and the files of various state commissions, certain banking institutions and other public and private records had been consulted. Thus far most of the evidence presented has been that on behalf of the railroad, as to what it claims were the causes of the receivership, which has been checked by the commission's forces, and the commission is now ready to present its own evidence. He mentioned some of the principal subjects which have been considered, including the Puget Sound extension, the electrification, the acquisition of various properties, the past and present management, the events immediately preceding the receivership, and the part that various individuals and firms have played. The commission had also followed up the various leads suggested to it by various persons.

Asked as to the opinion regarding the interest bill, Mr. Eastman said the commission considered the present bill a better one than the draft it had suggested last year in that it provides for the gradual amortization of the indebtedness. It does not seem to the commission desirable that the government should continue to be a railroad creditor and in many cases the public advantage would be served by making it easier for a railroad to finance necessary additions to its facilities, and while the commission believes that a 40-year period is rather long and a rate of 4 per cent rather low it is willing to leave such matters to the discretion of the Secretary of the Treasury. Some roads, he said, are perfectly able to pay off their indebtedness now but do not see fit to do so, and he could see no public advantage in applying the provisions of the bill to such cases, but in others a reduction in the interest would lighten the burden of stockholders who have had little or no return for many years.

A lengthy argument with several Senators was aroused because Chairman Eastman would not say that the reduction in interest rates would make possible a reduction in rates and at one point Senator Gooding, who introduced the bill, said he could see no object in giving the railroads a present. He also said he thought the government ought to finance the railroads instead of permitting banking institutions to make great profits from them. Asked how much the railroads owe the government recapture fund Mr. Eastman said he could give no figures because no valuation has been completed up to date and it is only possible to make assumptions such as by taking the book values or the information in its valuation files, but that it is holding hearings in the cases in which it believes there have been excess earnings.

If there is to be no foreclosure of the St. Paul, he said, a reduction in interest on the indebtedness to the government to 4¼ per cent would save the company about $962,000 a year. If there is to be a foreclosure the saving would not be so great under the plan of reorganization but the load on the stockholders would be greatly reduced and it would not be necessary to raise the $55,000,000 at once. Asked whether the bankers would profit by the reduction in interest he said that the movement for the reduction came from those opposing the reorganization managers and that an extension of the indebtedness would remove the necessity for an underwriting from which the bankers might profit. He thought the benefit clearly would go to the security holders rather than to the bankers.

Commissioner Cox outlined in a general way the points being considered in the commission's investigation, saying that there are many divergent opinions as to the causes for the receivership and that perhaps the commission may find that many of the contentions that have been made are of relatively little value but that when the commission makes it report it hopes to make it so complete that it will give not only the commission's conclusions but also the facts in detail as to the many contentions that have been made as to the causes, and that "no one need be apprehensive that his idea has not been thoroughly investigated."

J. J. Hanauer of Kuhn, Loeb & Co. was also recalled for further questioning by some members of the committee, and it was suggested that the committee would probably hear from a representative of the Secretary of the Treasury.

Restriction of Voting Rights of Preferred Stock Disapproved

WASHINGTON, D. C.

DISAPPROVAL of the issuance of preferred stock without voting power except in certain contingencies was again expressed by a majority of the Interstate Commerce Commission in the decision made public on March 26 on the application of the Pittsburgh & West Virginia for authority to issue new stock in exchange for its outstanding stock. The commission authorized the issuance of the amount of stock proposed but said that it was "not convinced that the conversion of one-half of the old common stock into non-voting preferred stock is either necessary or compatible with the public interest" and that there appears no sound reason for the proposed reduction in the par value of the common stock from $100 to $50 per share. Commissioner Woodlock dissented in a vigorous opinion, in which Commissioner Taylor joined.

The Pittsburgh & West Virginia applied for authority to issue $15,117,500 of common stock, consisting of shares of the par of $50 each, and $15,117,600 of preferred stock, consisting of shares of the par of $100 each, in exchange for $30,235,100 of outstanding common stock, consisting of shares of the par of $100 each. A hearing was held and no objection to the granting of the application was made.

The applicant proposed to revise its authorized capital stock so as to provide for the issue of $24,400,000 of common, consisting of shares of $50 par value, and $15,200,000 of 6 per cent cumulative preferred, consisting of shares of $100 par value, an aggregate of $39,600,000. The plan contemplated the issue presently of $15,117,500 of the common and $15,117,600 of preferred. It was proposed to exchange one share of the new common and

one-half share of the new preferred for one share of the old stock. Each share of the new common would be entitled to one vote, but the preferred would have no voting power except in the event of a proposal to create and issue additional preferred stock of equal standing to that already outstanding, or in any proposed alteration of the rights or terms of the outstanding preferred, or unless the company should be in default in the payment of quarterly dividends on the preferred for a period of one year. In the event of such default the preferred would have the same voting rights as the common until all accumulated dividends had been paid, and should the default continue for two years the preferred, as a class, would be entitled to elect one-half the board of directors. Following the oral argument, the applicant expressed willingness to permit the preferred stock, as a class, to elect one-half the board of directors in the event of default in the payment of dividends on the preferred for a period of one year. The board at present consists of thirteen members, but the applicant stated that the necessary action would be taken to bring the membership to an even number. At a stockholders' meeting held on January 11, 1926, the plan was approved by the holders of the 262,191 shares represented. There were no dissenting votes. The report of the commission says in part:

The applicant states that the consummation of the plan will enable the holders of the old stock to exchange up to one-half of their holdings for preferred stock, thus creating out of their present stock holdings an investment security upon which the prescribed dividends can be paid with reasonable certainty under all conditions; that these stockholders were originally bondholders of the Wabash-Pittsburgh Terminal Railway Company, of which the applicant is the successor, and that no dividends have been paid since the stock was issued in 1917. The applicant appears to have overlooked the segregation of the Pittsburgh Terminal Coal Company above referred to in connection with which the holders of the applicant's common stock were permitted to subscribe for the common and preferred stocks of the coal company in such manner as to afford them the equivalent of a substantial dividend.

"It is contended by the applicant that inasmuch as its property doubtless will be consolidated with that of some other railroad at some future time, control of the company by slightly more than one-fourth of its capitalization is desirable by reason of the fact that the acquisition of control by the consolidating company would thus be facilitated.

The record indicates that one of the reasons for the adoption of the proposed plan, is to enable the present stockholders to get back a part of their investment through the sale of the proposed preferred stock but at the same time to retain control of the company. In order to make this preferred stock attractive, provision is made for the payment of dividends on a 6 per cent cumulative basis, but with only limited voting rights, as above set forth. This would result, in effect, in the public taking over one-half ownership of the company but without the right of participation in its management except under certain contingent conditions.

It must be conceded that the applicant's capital structure as now constituted approaches the ideal. It has no bonds outstanding, and, aside from $2,700,000 of equipment-trust certificates, which will mature serially over a 9-year period, its sole capitalization is represented by $30,235,100 of common stock, consisting of 302,351 shares of the par value of $100 each.

Control of the corporation is vested in a majority of the stock, that is, 151,176 shares, and the record indicates that this controlling interest is owned by F. E. Taplin, president of the applicant and his associates. As above indicated, upon completion of the proposed plan, $15,117,600 of preferred stock, represented by 151,176 shares of the par value of $100 each, would be without general voting power. Control would then be vested in a majority of the $15,117,500 of the new common stock, represented by 302,350 shares of the par value of $50 each, or 151,176 shares of an aggregate par value of $7,558,800. In other words, the present controlling stockholders could sell all of the preferred stock and a minority of the common stock received by them in exchange for their present holdings, and still retain control of the company with approximately one-fourth of its capital stock. The applicant attempts to justify this condition on the ground that it has no bonds outstanding and that if 50 per cent of its capitalization consisted of bonds, the control of the corporation would be vested in a majority of the stock, or approximately one-fourth of the capitalization; also, that the preferred stock will have preference as to dividends, and in the distribution of assets in the event of dissolution, and should not have voting power in addition.

We are of opinion, however, that the fact that a company has no bonds outstanding is not a valid reason, in itself, why it should issue either bonds or non-voting preferred stock. In the instant case no new financing, corporate reorganization, nor change in property ownership or operations are involved. As the established capitalization of the applicant entitles the holder of each share of its capital stock to a vote, we are not convinced from the record that the conversion of one-half of the old common stock into non-voting preferred stock is either necessary or compatible with the public interest.

Further, there appears to be no sound reason for record, or otherwise, for the proposed reduction in the par value of the common stock from $100 to $50 per share.

We find that the issue, by the applicant, of $15,117,550 of new common stock, consisting of 151,175½ shares of the par value of $100 each, and $15,117,550 of 6 per cent cumulative preferred stock, consisting of 151,175½ shares of the par value of $100 each, said common and preferred stocks to have equal voting rights, and to be exchanged on the basis of one-half share of new common and one-half share of new preferred for one share of old common stock now outstanding, (a) is for a lawful object within its corporate purposes, and compatible with the public interest, which is necessary and appropriate for and consistent with the proper performance by it of service to the public as a common carrier, and which will not impair its ability to perform that service, and (b) is reasonably necessary and appropriate for such purpose.

Commissioner Woodlock, dissenting, said:

Where do we find clear evidence that the issue of preferred stock, with contingent voting rights only, is "contrary to public policy" or "against public interest"? I am well aware that some people assert that it is. I do not find, however, that courts or legislatures have ever laid down the general principle that preferred stock is absolutely entitled to equal voting rights with common stock. I find, indeed, instances where both have either explicity or implicitly quite definitely recognized the contrary view. The very nature of preferred stock, distinguishing it from common stock, is such that there is a fundamental difference between the two classes in the matter of management rights. Preferred stock enjoys certain privileges, advantages and priorities against common stock, all by virtue of agreement with holders of common stock. A holder of preferred stock is in the position of a "special partner" in a firm. "Special partners" do not, as a rule, take part in management. Preferred stock is sheltered by its privileges from the risks of the enterprise. These risks are all undertaken by common stock, and the most elementary principles of fairness would seem to indicate that as long as the common stock keeps the preferred stock privileges intact, it should enjoy full management rights. I am utterly unable to divine in what respect "the public interest" requires that this elementary principle should be set aside. Nobody is obliged to buy a preferred stock with limited voting rights. Whoever does so, must be presumed to do so with full knowledge of what he is buying. Why should he not be allowed to do so? Every use can be converted into abuse. To point to possible abuse, however, is not to destroy the principle that I have described.

With respect to the conversion of the remaining common stock from $100 par to $50 par, the report disallows such conversion, presumably upon two grounds. One is that by doubling the number of shares the voting power of the remaining common stock is doubled. The other is that it would enable "control" of the property to be acquired or to be held by a much smaller investment of money than that which is required under the present capitalization. These reasons seem to me to have little weight. As a matter of fact, under the applicant's proposals "control" of the Pittsburgh & West Virginia would cost about the same proportion of the total investment in the property as the average proportion necessary to "control" all the railroads. With railroad bonded debt almost 60 per cent of the total investment, and capital stock 40 per cent, 21 per cent of the stock would give "control." Under the applicant's proposed capitalization 25 per cent of the present common stock would be needed for the same purpose. Nor is it our business whether or not present owners of the common stock may wish to withdraw some of the money that they have invested in the property by sale of preferred stock, without loss of "control." Seemingly, according to the report the suggestion that somebody may make a profit by the rehabilitation of this property is abhorrent. If we are to rely upon private enterprise and private capital for management of transportation, and if we are to rely upon voluntary enlistment of that capital, it is manifest that the utmost freedom of exchange should be provided for owners of that capital. In my judgment the applicant's requests should have been granted.

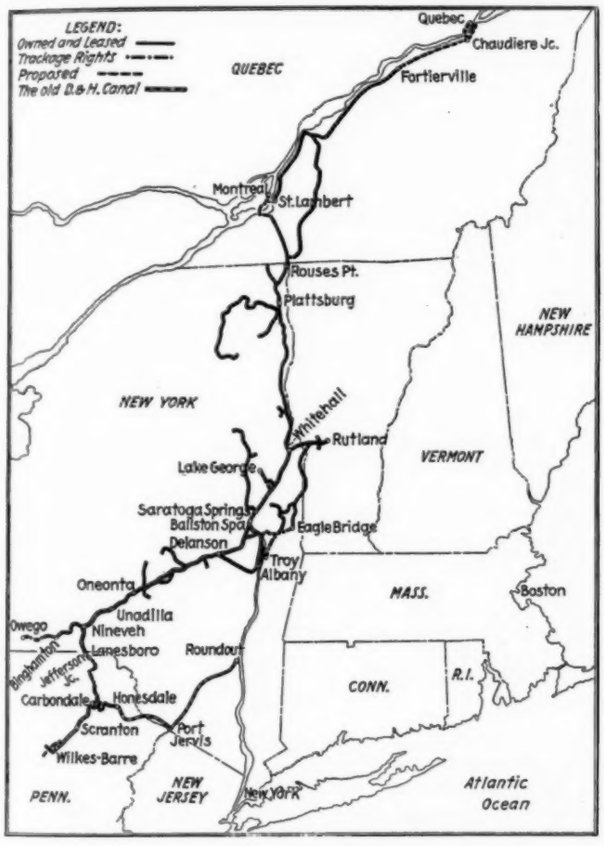
I am authorized to say that Commissioner Taylor joins in this dissenting expression.

Delaware & Hudson

Brief remarks on operating results in 1925 *combined with a review of "A Century of Progress"*

THE annual report of the Delaware & Hudson for 1925 issued on Monday shows that the company had a net income after interest and other charges of $4,907,708 which was equivalent to 11.54 per cent on the capital stock, and compared with $5,817,376, or 13.69 per cent in 1924.

This means that the Delaware & Hudson, like the other anthracite carriers, came through the year without particularly detrimental effect on its net earnings on account



The Delaware & Hudson

of the four months' suspension of the movement of its most important commodity. (The term of four months, of course, includes that part of the strike to the end of 1925.) It is particularly significant that the Delaware & Hudson should have come through the year so well. Inasmuch as anthracite makes up a larger proportion of its total revenue tonnage than in the case of the other large anthracite carriers, it might have been expected to have been more adversely affected. The situation is very different from what it was in 1922, for instance. In that year there was a suspension in the anthracite coal fields which lasted 163 days, all contained within a single year. As a result of this, combined with the nearly contemporaneous railroad shopmen's strike, the Delaware & Hudson suffered a deficit after fixed charges, the first deficit that it had reported in a long period of time.

50 Per Cent of Traffic is Coal

Normally between 43 and 50 per cent of the Delaware & Hudson's revenue tonnage is anthracite. The road also handles a comparatively small amount of bituminous—in recent years about 10 per cent of its total revenue tonnage. Its total revenue from the transportation of coal approximates 50 per cent of its total operating revenues. The anthracite tonnage in 1924 was the largest in the company's history while the bituminous tonnage happened to be the smallest for several years. In 1925, the anthracite tonnage was 28.5 per cent less than in 1924 and less also than any preceding year for some time with the exception of 1916 and 1922 in which years there were also coal strikes. The coal revenues as a whole decreased 20.4 per cent. Whereas in 1924 the coal revenues had constituted 50.18 per cent of the total operating revenues, in 1925 they made up but 43.85 per cent. There was some increase in the tonnage of other commodities so that the revenue tonnage as a whole decreased only 11.8 per cent and because of an increase in the average haul the decrease in the revenue ton-miles was but 3.8 per cent. The Delaware & Hudson's traffic must have been affected to a great extent by the decreased purchasing power of the coal regions which it serves so that, taking everything into consideration, it would appear that if there had been no coal strike it is very likely that the road would have had in 1925 one of the best years, if not the best year, in its history.

TABLE I. DELAWARE & HUDSON INCOME ACCOUNT

	1925	1924	Increase or decrease
Average mileage operated	905.62	918.38	—12.76
Railway operating revenues	41,769,491	45,012,988	—3,243,497
Maintenance of way	4,713,894	5,328,910	—615,016
Maintenance of equipment	11,121,308	12,200,672	—1,079,364
Transportation	15,499,877	16,688,257	1,188,380
Total operating expenses	34,030,126	36,727,926	—2,697,800
Operating ratio	81.47	81.59	—.12
Net revenue from operations	7,739,365	8,285,062	—545,697
Railway tax accruals	1,136,746	1,437,180	—300,434
Railway operating income	8,288,439	9,196,608	—908,170
Equipment rents	1,472	2,882	—1,410
Joint facility rents	374,165	362,543	11,622
Net railway operating income	6,715,442	7,308,764	—593,323
Non-operating income	5,412,600	5,862,629	—450,029
Gross income	12,128,041	13,171,393	—1,043,352
Rent for leased roads	1,904,152	1,855,034	49,118
Interest on funded debt	3,602,113	3,464,771	137,343
Total deductions from gross income	7,220,333	7,354,017	—133,684
Net income	4,907,708	5,817,376	—909,668
Per cent earned on capital stock	11.54	13.69	—2.15

The decrease in freight revenue in 1925 as compared with 1924 was 10 per cent. There was a decrease in passenger revenues of 3 per cent and the total operating revenues decreased 7 per cent. The decrease in the operating revenues was $3,243,497. At the same time there was a decrease of $2,697,800 in the total operating expenses, the latter being 7 per cent less than in 1924 and 14 per cent less than in 1923. The 1925 operating ratio of 81.47 compared with 81.59 in 1924 and was the lowest operating ratio to be reported by the Delaware & Hudson since 1917.

It compared with the annual average operating ratio for the test period (July 1, 1914, to June 30, 1917) of 68.97. The ratio of transportation expenses to total operating revenues was 37.11 in 1925 as against 37.07 in 1924 and, except for 1924, was the lowest to be reported since 1916. The transportation ratio for the test period was 36.21. The 1925 net railway operating income or net after equipment and joint facility rents was $6,715,442 which compared with the standard return or average annual net railway operating income for the test period, of $7,415,149.

Plenty of Information

One thing to be said in favor of the Delaware & Hudson is that there is available plenty of information concerning the history and operations of that interesting property. President L. F. Loree, following apparently the precedents of long years' standing always takes his stockholders into his confidence and gives them much pertinent and purposeful advice concerning the operations of their property and of the railway situation in general. Furthermore, he supplies them with very elaborate statistics. In his annual report, for example, he gives them not only the figures for the current year with comparisons with the preceding year but elaborate tables showing comparative figures covering all the years from 1916 to date supplemented by averages worked out for the test period as well as for the federal control period. No reader needs to be told how valuable such comparisons prove to the analyst who desires to look into Delaware & Hudson operations.

Recently, however, Mr. Loree and the board of managers of the Delaware & Hudson Company have gone a step further and have had compiled a book, a volume of 755 pages, elaborately illustrated, adequately indexed, prepared with scholarly regard to detail and written in unusually interesting and readable style. There may be a question whether any other railroads have a history that could be treated so interestingly as has been done in this book but there is no gainsaying that if more such books could be printed the economic literature of this country would be very advantageously enlarged.

"A Century of Progress"

The book is called "A Century of Progress" with a subtitle, "History of the Delaware & Hudson Company from 1823 to 1923." It treats of the origin of the Delaware & Hudson Company and its constituent lines, carries the story through the vicissitudes of the early operations of the company, describes the beginnings of its early successes, indicates how it was put together in its present form and explains the background of the present long-standing financial success of the company. The book omits all bombastic reference to the past or present personnel of its management but throughout there is evidence that the company was always under able management and was controlled by a board of managers who managed, thereby fulfilling the requirement of the Interstate Commerce Commission which says that the necessity of successful railroad administration today is boards of directors who will direct. The story of the Delaware & Hudson is extremely interesting particularly from the point of view that the property today is engaged in functions which are entirely different from those which were in the minds of its founders.

Those who originated the Delaware & Hudson Company were among the earliest operators in the anthracite business. Their original plan was to mine coal in the neighborhood of Carbondale, Pa., and to carry it into Philadelphia. The story is that William and Morris Wurts spent some eight years in the Lackawanna Valley before they finally started mining at Carbondale in 1822. In their first year they mined about 1,000 tons and succeeded in carrying about 100 tons on sleds and rafts to the Philadelphia market but unfortunately were unable to make a success of this business because of the competition of Lehigh coal which could be brought to the same market at much less expense. The plan was adopted of getting their coal to the New York market and they, therefore, entered into negotiations with New York interests and in 1823 there was incorporated the "President, managers and company of the Delaware & Hudson Canal Company." The subscriptions were readily obtained and in 1825 the managers were organized at the Tontine Coffee House in New York City. The principal point is that the transportation end of the business was secondary to the coal which situation is, of course, fairly typical of the early origin of most of the anthracite carriers with the possible exception of the Lehigh Valley which had its railroad first and acquired its coal fields later.

TABLE II. DELAWARE & HUDSON OPERATING RESULTS. SELECTED ITEMS, 1916 TO 1925 AND TEST PERIOD

Year	Revenue Ton Miles	Revenue Passenger Miles	Rev. per ton mile cents	Total operating Revenues	Total operating expenses	Net operating revenues	Operating ratio	Net Railway operating income	Net after charges	Net charges for additions and betterments
Test period*	3,229,733,000	130,984,000	.654	25,474,214	17,568,695	7,905,579	68.97	7,415,149	.....	.....
1916	3,486,439,000	136,896,000	.632	26 634.426	18,111.095	8,523,331	68.00	.....	4,158,372	.....
1917	3,954,097,000	129,621,000	.641	29,989,399	23,449.953	6,539,446	78.19	.....	4,992,780	2,700,770
1918	4,962,078,000	112.181.000	.741	34,789.864	31,353.784	3,436,080	90.12	.....	4,714,792	1,121,628
1919	3,531,433,000	132,884,000	.835	34,749,709	31,679.504	3,070,205	91.14	7,109.759	4,605,004	16,845
1920	4,265.735,000	130.972,000	.918	45,354,299	42.126,330	3,227,969	92.88	7,439,730	4,933,163	6,256.307
1921	3,203,759,000	119.697.000	1.236	45.776.859	38.825,529	6,951,330	84.81	6,759,117	4,937,452	478,642
1922	2,844,619,000	115,902,000	1.084	37,823,256	35.615.053	2,208,203	94.16	1,112,850	—476,000	1,530,943
1923	3,856 100.000	122,598 000	1.052	47,320,452	39,352,240	7,968,212	83.16	6,450,026	4,711,700	2,060,538
1924	3,500,192,000	116,432,000	1.104	45,012,988	36,727,926	8,285,062	81.59	7.308,764	5,817,376	65,429
1925	3,389,954 000	113.900,000	1.026	41,769,491	34,030,126	7,739,365	81.47	6,715,442	4,907,708	694,092

* Three years ended June 30, 1917.

The Canal

The company in its attempt to bring coal to tidewater, proceeded to construct a canal from Roundout near Kingston on the Hudson river to Honesdale, 108 miles. It then also built a railroad from Honesdale to Carbondale, 17 miles. This railroad was operated by means of stationary engines and gravity. The canal was completed in October, 1828. Honesdale is 972 feet above sea-level and to make that height, there were in the canal no less than 110 locks having lifts ranging from 8 to 12 feet. The company attempted at an early stage in its career to operate its railroad by steam and in 1828 Horatio Allen purchased for the company four locomotives in England. One of these was the Stourbridge Lion which arrived in this country in 1829 and was given a trial in August of that year being, therefore, the first steam locomotive to be run under its own steam in this country. Unfortunately, the builders had been unable to adhere to specification and the locomotive's excessive weight proved too great for the track structure and the trestles with which the railroad part of the system was then provided. It was not until 1860 that steam operation was again attempted by the company and then on a four-mile extension of the line south of Olyphant. In 1835, however, operation of steam locomo-

tives was begun on the Rensselaer & Saratoga which became part of the Delaware & Hudson in 1871.

The book discusses in an extremely interesting manner the difficulty the company had to secure a market for its new fuel. It was a matter of great importance when grates for the burning of anthracite were first installed in one of the Hudson river boats and a considerable to-do was made of the first trip of an anthracite-burning ferry boat in New York Harbor. The markets, however, were gradually obtained and the company's business expanded slowly and satisfactorily. The gravity railroad was extended from time to time, rebuilt to handle a larger tonnage of coal and on two or three occasions large sums were appropriated for the widening and deepening of the canal to handle larger canal boats.

Competition in the New York Market

The difficulty was that gradually there began to be increased competition in the New York market particularly from the Delaware, Lackawanna & Western which served mines in approximately the same territory but reached New York with a railroad. The managers of the Delaware & Hudson Company were enough alive to the situation to see that they would have to reach new markets for their coal. They solved their problem first by making in 1868 an agreement with the Erie whereby that company engaged to construct a railroad from Carbondale northward to its main line at Susquehanna, for carrying the coal to Rochester and Buffalo and providing also for the transportation of coal during the winter months from Honesdale to Weehawken when the canal was frozen. The company had also become interested in the Albany & Susquehanna which in 1866 had completed a line from Albany to Unadilla. In 1867 the Delaware & Hudson contracted to assist in completing the Albany & Susquehanna to Ninevah and finally to Binghamton, the line being open for its entire length in January, 1869. For a while a connection was made between the original Delaware & Hudson and the Albany & Susquehanna by means of the Erie connection via Binghamton but in 1872 the Delaware & Hudson interests built a connection north from Jefferson Junction or Lanesboro which gave a better connection with the Albany & Susquehanna at Ninevah.

The Albany & Susquehanna had been incorporated in 1851. In February, 1870, the interest of the Delaware & Hudson in the Albany & Susquehanna was solidified by a lease of the property in perpetuity.

Extension North to Canada

Another important phase which receives considerable attention in the book is the organization and expansion of the Rensselaer & Saratoga; it was incorporated in 1832 to build a line from Troy, N. Y., to Ballston Spa and began operations in 1835 using on its first trip, horses on part of its journey and a steam locomotive on the remainder. The Rensselaer & Saratoga proved to be a rather prosperous organization and began to expand in 1851 by acquiring other lines north of Troy and Albany including the Albany & Vermont, the Saratoga & Schenectady, the Troy & Rutland and various others. This company was acquired by the Delaware & Hudson by lease in 1871. The Delaware & Hudson then proceeded to extend north from the territory served by the Rennselaer & Saratoga and by assembling such enterprises as the New York & Canada, the Whitehall & Plattsburg, the Montreal & Plattsburg, etc., reached Rouses Point and a connection with the Grand Trunk in 1875, thereby reaching Montreal. More recently the company has constructed the Napierville Junction and the Quebec, Montreal & Southern and now reaches the St. Lawrence river with its own rails. Improved connections were also established with the lines into New England.

The history here outlined in some detail is complicated but one point stands out above all the rest. That is the fact that the original founders of the Delaware & Hudson enterprise started with the idea of selling coal in the Philadelphia market. Later they turned their attention to the New York market. Finally they interested themselves in still a third market, namely, the capitol district of New York state, and now presumably little Delaware & Hudson coal comes to the New York market whereas the larger portion of it is sold in the capitol district, in northern New York, in Canada and in New England. Of course, after the New York market was lost the company ceased its canal operations. The last canal boat carrying the company's anthracite to pass through the canal was in November, 1898. In 1899 the gravity railroad ceased operation as a gravity line and was rebuilt as a standard gage line operated by steam. The canal was sold in June, 1899, and there ended the first but most important single phase in the history of this interesting company.

Throughout its entire history the road always seems to have been ably managed, always enterprising and always sufficiently skilful to meet changing conditions as they offered new problems for solution.

A Criticism of the Book

The involved story is somewhat difficult to follow. No doubt, the book would have been improved had three or four tables been added, one, of net earnings and return on the capital stock year by year from the organization of the company. Another very valuable addition would have been a chronological table which would enable one to follow somewhat more easily the involved intercorporate relations and important developments. Third, there might well have been an organization diagram showing the place of each of the several subsidiaries—some of which are mentioned repeatedly—in the present Delaware & Hudson scheme of things. But these are comparatively secondary criticisms. The book is a remarkable production and the president and the board of managers of the Delaware & Hudson are to be congratulated for having authorized the work incident to its publication.

Woodlock Confirmed by Senate

WASHINGTON, D. C.

THE President's appointment of Thomas F. Woodlock as a member of the Interstate Commerce Commission, on which he has served for a year under recess appointments, was confirmed by the Senate on March 26 by a vote of 52 to 25, after a five-hour debate in executive session. The roll-call was not made public, partly, it is said, because so many senators who had previously declared themselves as opposed to his appointment had reversed their positions. The overwhelming character of the vote was received with surprise because until recently it had been reported that a poll of the Senate had indicated a slight majority against confirmation and the committee on interstate commerce had voted against it; but recently the second instalment of the printed record of his testimony before the committee in January had become available, he did not vote on the transcontinental fourth section decision in the way that some of his opponents had said he would, and the President had quieted some of the opposition of senators who have long been demanding appointments from their states by letting it be known that in filling future vacancies on the commission he intended to give special consideration

to the South, the Southwest and to Pennsylvania. This is said to have removed a good deal of Democratic opposition to the appointment and in the final debate Chairman Watson of the committee on interstate commerce is said to have answered many of the points made by the radicals by quoting from Mr. Woodlock's own statements before the committee. Only the day before that set for the vote the commission had made public its decision denying the application of the Pittsburgh & West Virginia for authority to issue non-voting preferred stock, and the dissenting opinion by Mr. Woodlock in which he took the supposedly "unpopular" position that the application should have been granted.

Mr. Woodlock was appointed on January 26, 1925, to succeed Mark W. Potter, but the committee on interstate commerce, to which the question of confirmation was referred, took no action before Congress adjourned and the President gave him a recess appointment. After the opening of the Sixty-ninth Congress the President again sent up his nomination. Because of opposition both to this appointment and to that of R. V. Taylor, nominated to succeed C. C. McChord, the Senate committee decided to call both men before it for questioning. The committee voted to recommend Mr. Taylor's appointment after about half an hour but Mr. Woodlock was called before it three times and questioned at length, principally by Senator Wheeler of Montana, regarding the views he had expressed in his newspaper articles. After some delay the committee voted not to recommend confirmation and it has been reported that some of its members advised the President to withdraw the nomination but he declined to do so.

A lively argument was aroused in the Senate on March 27 by the efforts of several of the senators who are presumed to have opposed Mr. Woodlock's confirmation, to be allowed to tell their constituents how they voted by having the injunction of secrecy removed from the proceedings of the executive session and have the roll-call made public. It was stated, however, that some senators objected to this course. Among those who wished the proceedings made public were Senators Blease, Pittman, Borah, Norris, McKellar. Senator Norris asked unanimous consent that each senator be allowed to tell how he voted, but objection was made. Senator Pittman finally moved for an executive session in which to further consider the question of making the roll-call public, which was defeated 34 to 30. Those who voted for the motion, among whom will probably be found most of the 25 who voted against Woodlock, were as follows:

Blease	Gooding	McMaster	Simmons
Borah	Harris	McNary	Stephens
Brookhart	Howell	Mayfield	Trammell
Broussard	Johnson	Norris	Tyson
Copeland	Kendrick	Nye	Walsh
Dale	King	Pittman	Wheeler
Dill	La Follette	Sheppard	
George	McKellar	Shipstead	

Senator Pittman persisted in his efforts to have the roll-call made public, and on March 29, in executive session, the Senate is reported to have voted 49 to 26 in favor of doing so, but this was short of a two-thirds majority of those present. On the following day he introduced a resolution to amend the Senate rules relating to the consideration of nominations in executive session to provide that the making public by a Senator of his own vote shall not be deemed a violation of the injunction of secrecy.

FUEL OIL CONSUMPTION per thousand gross ton miles in freight service on the Southern Pacific decreased from 15.47 gal. to 12.43 gal. in the period from January 1, 1920, to January 1, 1926, the saving being estimated at approximately 2,362,129 barrels.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading showed another large increase in the week ended March 20, when the total was 977,209 cars. This was a gain of 65,728 cars as compared with the corresponding week of last year and an increase of 68,819 cars as compared with 1924. Increases as compared with last year were reported from all districts and in all commodity classifications except forest products and ore but the principal increase was in coal, which showed a gain of 42,459 cars.

The summary, as compiled by the Car Service Division of the American Railway Association, is given in the table below:

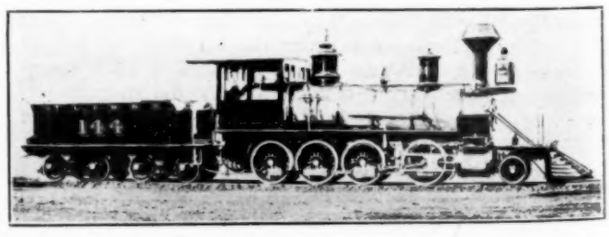
REVENUE FREIGHT CAR LOADING—WEEK ENDED SATURDAY, MARCH 20, 1926

Districts	1926	1925	1924
Eastern	237,878	216,262	225,207
Allegheny	198,136	188,447	191,179
Pocahontas	51,479	39,837	38,402
Southern	162,437	154,306	145,785
Northwestern	119,563	115,421	118,413
Central Western	141,226	133,670	129,671
Southwestern	66,490	63,538	59,733
Total Western districts	327,279	312,629	307,817
Total all roads	977,209	911,481	908,390
Commodities			
Grain and grain products	40,518	34,282	37,792
Live stock	29,487	27,988	31,072
Coal	183,205	140,746	161,106
Coke	14,331	12,034	13,312
Forest products	78,998	79,101	81,660
Ore	11,370	12,129	11,180
Mdse., L. C. L.	266,254	259,096	250,610
Miscellaneous	353,046	346,105	321,658
March 20	977,209	911,481	908,390
March 13	967,411	926,119	916,762
March 6	964,681	932,044	929,381
February 27	912,658	864,096	944,514
February 20	913,743	925,886	845,699
Cumulative total twelve weeks	11,017,760	10,849,640	10,680,622

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended March 20 showed an increase over the previous week of 3,365 cars. Western loadings increased only 401 cars, increases in merchandise and miscellaneous freight being partially offset by a decrease in coal of 481 cars. The Eastern division pulpwood was heavier by 833 cars, merchandise by 847 cars and miscellaneous freight by 1,262 cars. Grain showed a decline of 447 cars and coal of 423 cars, the net increase being 2,964 cars. Compared with the same week last year there was an increase of 3,632 cars.

	Total for Canada			Cumulative totals to date	
Commodities	March 20, 1926	March 13, 1926	March 21, 1925	1926	1925
Grain and grain products	5,696	6,266	6,942	79,025	73,109
Live stock	2,263	2,114	2,286	22,429	24,784
Coal	3,266	4,170	3,310	53,767	58,469
Coke	406	283	252	5,575	3,598
Lumber	3,920	3,285	3,025	34,736	31,911
Pulpwood	4,046	3,327	4,039	43,856	45,974
Pulp and paper	2,552	2,615	2,097	29,439	24,047
Other forest products	3,729	3,541	3,521	39,781	37,915
Ore	1,416	1,386	1,286	15,713	12,944
Merchandise, L.C.L.	16,482	15,300	15,122	161,685	154,221
Miscellaneous	13,218	11,342	11,482	120,144	110,565
Total cars loaded	56,994	53,629	53,362	606,150	577,537
Total cars received from connections	41,526	40,481	33,584	401,818	374,960



Stands of Green Timber Are Sometimes Isolated by a Fire

Claims Arising from Forest Fires Present Special Problem

Methods to pursue in determining the railroad's responsibility and the extent of the damage

By Philip T. Coolidge,
Forest Engineer, Bangor, Me.

IN forested portions of the United States, fires originating on or adjacent to railway right-of-way generally result in the filing of damage claims against the carrier. It is true that fires are caused by locomotive operation, and that they occasionally get beyond the control of section men engaged in "burning" the right-of-way, but fires on or near railroad lines are also caused by trespassers and other persons. Railroad companies are generally anxious to be entirely fair in meeting claims, but a railroad should not, in justice to its owners, and to the public, pay unjust or excessive claims.

Cut-over Land Presents a Serious Hazard. Damage from Fire on Such Land Would Be Principally to Young Growth and Unmerchantable Hardwood

When the liability of the railroad is debatable, conclusive evidence one way or the other can frequently be developed by a determination of such facts as the time of the fire relative to the passage of trains, the strength and direction of the wind at that time, and the possible presence and action of trespassers or of other persons near the track. The direction of the wind during the period of burning can generally be determined by an examination of the butts of trees or bushes in the burned area. As a general rule, the flames lick around the bases of the trees so that the lee sides are the more severely blacked. This blackening, however, indicates only the direction of the wind, and not necessarily the direction of travel of the fire, although generally so. This is because a fire will sometimes back slowly against the wind.

Damages may be classified under three headings: Damages to improvements, such as buildings and fences, damages to merchantable timber, and damages to young growth. This article deals only with the latter two headings.

The Burned Area Must Be Cruised

Damages to merchantable timber are determined by cruising the burned area, exactly as any timber tract would be cruised. The estimate should be made with sufficient care to establish authoritative evidence. It is seldom that a fire burns so severely that the trees are consumed. The bark is sometimes burned so that it peels, but as a rule, the only condition approaching destruction of the bodies of the trees is a blackening of the bark, or burning through the bark near their bases. The real damage is due to the death of the trees by over-heating of the inner bark of the trunks, or by burning of the foliage or roots. In many cases, therefore, fire-killed timber can be salvaged,—a matter that is discussed in subsequent paragraphs.

As a general rule, an estimate of damages to merchantable timber should not be made until three or four months after a fire. Many trees, apparently killed, will then be found to be alive, and also vice versa. If, however, examination of the burned area is delayed more than a year

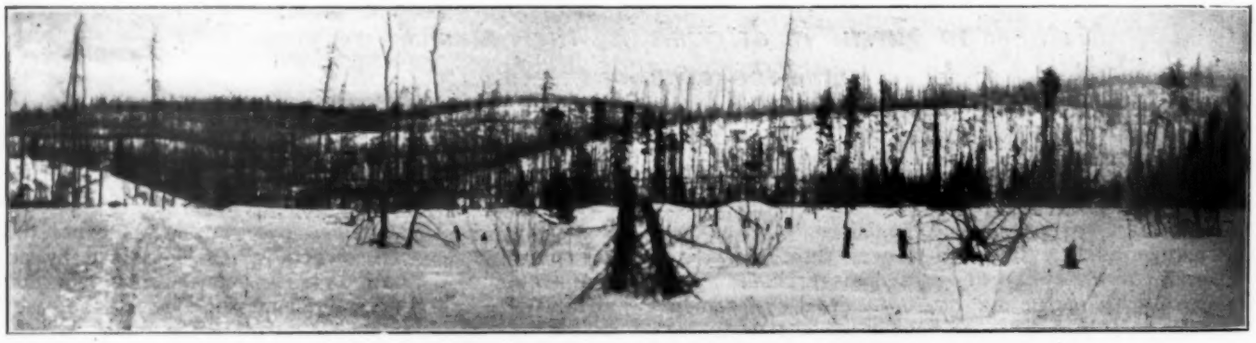
after the fire, it becomes difficult to determine whether dead trees were killed by the fire or by insects or disease at about the same time. Damages by fire to timber already dead are not ordinarily claimed, unless, as might rarely be the case, it can be shown that the dead timber was merchantable, and was so charred or burned by the fire as to prejudice its sale value.

In many parts of the United States, hardwood timber has no recognized value, but where it does have a value, it is generally advisable to estimate damages during the summer, when the trees, if alive, would bear green leaves. It is exceedingly slow work in winter to determine whether hardwoods recently burned are alive or dead, as it is necessary often to cut into each tree to determine the condition of the inner bark. Also, if damages to soil and young growth are claimed, it is advisable to examine the land when the ground is not covered with snow.

In determining damages to orchards, it is sometimes difficult to distinguish between damage by insects or disease, and damage by fire. The age and condition of recent green shoots frequently afford satisfactory evidence as to the condition of the orchard previous to the fire.

Distinguishing the Fire-Killed Trees

Trees of some species, if killed, behave in peculiar ways. For example, the leaves, or "spills," of hemlock, as they



Fire-Killed Trees Still Standing Several Years After a Fire

are called by woodsmen, fall very quickly after a fire, so that the trees have the appearance of having been dead for some time. Other species of softwoods generally hold their dead leaves for some weeks or months. These conditions are important in distinguishing trees killed by the fire from trees which had been killed previously by some other injury. Trees also vary in their susceptibility to damage. The writer has observed areas where a light fire killed only the spruce, large and small,—accompanying hardwoods being undamaged. Thick-barked species like pine are likely to survive a fire, and in general, the more southerly species, like oak, ash, hickory and Southern pine, are much more hardy in respect to fire than are northern species.

Fires driven before a strong wind frequently kill trees by scorching their tops, and without burning the butts. This occurs particularly on the edges of a burn, and sometimes causes appreciable damage. Fires in the North frequently go out when they encounter green timber, and burn only on slash-covered areas or areas previously burned, so that the principal damage to merchantable timber will be confined to a narrow fringe bordering the stand of heavy timber.

Incidentally, the behavior of fires suggests measures which are of practical application in some localities in the prevention and suppression of fires. In the North and East, fires are more apt to occur during the warmer hours of sunny days. They originate with noticeable frequency on slash-covered lands on the east side of the track, adjacent to ascending grades or at points where locomotives are commonly started. In some states, operators of timberland are required by law to dispose of slash within 50 or 100 ft. of a railroad right of way. Such a law has been found beneficial, and it imposes the same duty on the lumberman as on the railroad, to keep the vicinity of the track free of inflammable material.

Estimates of damages to merchantable timber are commonly based upon current local values of standing timber, figured by the board foot, the cord, or the piece, as the custom may be for the species of timber injured. Values of timber vary with quality and accessibility. If trees are not killed, but are so badly burned at the base that decay may start within a few years, some allowance must be made for damages to them.

What Values Should Be Applied

Confusion sometimes arises as to the proper stumpage rates to apply because of differences between rates applied in annual sales of stumpage to operators and rates applied in transactions covering large areas of timberland. In some parts of the country, owners hold timberlands for many years, deriving revenue from annual sales of stumpage. In such localities, the values of large tracts of timberland are only 50 or 75 per cent of the rates charged in annual stumpage sales. The owner whose timber has been killed is clearly entitled to compensation on the basis of the full value which he might have realized in a sale of stumpage. On very large burns, however, the amount of timber would have been too great to dispose of in an immediate operation. The owner of a large area could realize on his property only by selling the tract outright, or by holding it for a period of years, selling stumpage from time to time, but in the meantime bearing carrying charges such as interest on the value of the land, taxes, supervision and protection. In either case, his net returns would be at lower rates of stumpage than could be charged in an annuual sale to an operator.

If any of the merchantable timber can be salvaged, the proceeds of the salvage operation should be deducted from damages. In some cases salvage is not attempted when such would have been clearly practical, but failure to take advantage of the opportunity is the business of the owner. If stumpage is sold in a salvage operation, the value of the salvage is generally obvious. If, however, the owner operates a saw-mill or paper mill, and sells only the finished product, computation of salvage is much more difficult. Careful study is necessary to determine the true loss involved in the use of the salvaged timber.

Even if the entire quantity of timber killed is salvaged, there may be loss due to reduction in quality. For ex-

ample, woodboring insects active during the summer may so injure the logs or lumber, or even the standing fire-killed trees, that the product must be sold in lower grades than would otherwise be the case. Some species are seriously injured in a year or two by checking. Pulpwood may be so blackened that it is unusable, or at best necessitates excessive trimming,—to produce in the end only a low grade of pulp.

The killing of the timber forces the owner to an immediate operation. He may find it difficult to arrange economical logging immediately after the fire, and he is not free to time his operation advantageously in regard to good marketing conditions.

Claim is sometimes made for damages because timber, although not killed by a fire, is isolated by it. If the

An Example of Insect-Killed Timber. Such Material Must Be Distinguished from Fire-Killed Trees in Estimating Damages

isolated timber has suffered a loss in value, some claim for damage is undoubtedly fair, although in many cases the damages are more imaginary than real. Careful mapping of the very irregular areas commonly burned is therefore necessary. Numerous islands of green timber will escape the fire, and on the other hand small patches ignited by sparks are burned in advance of the main fire. Fires in the North, driven by a strong wind frequently make jumps of a quarter of a mile.

Damages per acre to young growth must be based largely on judgment, and on knowledge of local values of land and young growth, as distinct from values of mature timber. On the national forests, the Forest Service has established detailed schedules for determining the value of young growth, and appraisals by the Forest Service have recognized weight in the courts. For private lands, however, there is no agency which has established authoritative methods of appraising young growth. In determining the value of young growth, the size, species, and condition of the trees, and the severity of the fire must be considered. On the edges of a burn, for example, the fire is commonly light, and kills no merchantable timber, and only a small proportion of the younger trees. It is also common to find areas of old burn reburned. On such areas, the value of young growth is generally small. Care must obviously be taken in mapping burned areas, to distinguish new burn from old burn, and to eliminate areas of old burn which have not been reburned. It must also be kept in mind that after a logging operation much of the young growth will be found destroyed, so that young growth does not actually have the possibilities of development apparent on land not been cut over.

The cost of artificial reforestation cannot be applied in determining the value of natural young growth except in localities where extensive reforestation establishes recognized values in natural young growth. Ordinarily, natural young growth is much inferior in value to planted timber. The value of a plantation, however, is not necessarily as much as the cost of making it. As a matter of fact, after young growth has reached some size, reforestation could not replace exactly the trees destroyed, and cost of replacement cannot be taken as a correct measure of the value of the young growth destroyed. Occasionally, as near towns, young growth can be shown to contribute value to the general appearance of the land, as for building purposes, and awards may be obtained greater than the value of the trees, considered simply as immature commercial timber.

To discount future values of standing timber back to the present, as a method of establishing the value of young growth, is next to impossible. One can enter into a maze of figures, based principally upon guess work, which would have little standing in court.

Damages to soil are closely related to damages to young growth, and are generally not separated. Damage to the possible agricultural value of the soil is generally not important on areas of forest land. Such lands must in any event generally be burned over by the agriculturist to remove brush and debris. On lands suitable only for forest growth, the ability of the land to restock itself with trees of value equal to the young growth burned is the essential matter, and is too closely related to the valuation of the young growth actually destroyed to require separate consideration. On steep rocky slopes, damage to soil by fire is frequently more serious. If the land in question is valuable for water supply purposes, erosion following a fire may prove particularly harmful. Specific claims for damage to soil are not common, however, and determination of values is beyond the scope of standardized methods of investigation.

Casualties to Trainmen

COMPARISONS to show that "whatever may be true of other industries American railways have maintained a successful fight against conditions which tend toward increased accident rates" are given in an article by the Bureau of Labor Statistics, Department of Labor, which is published in the February issue of the Monthly Labor Review, analyzing the Interstate Commerce Commission's statistics covering casualties to trainmen, Class I railroads, from 1916 to 1924. The article, omitting some of the tables used, follows:

"The table is drawn from Accident Bulletin No. 93 of the Interstate Commerce Commission, but has been rearranged to permit comparisons, which in the original form are somewhat difficult to make. The rates have also been recalculated on the basis of 1,000,000 hours' exposure rather than on 1,000 men employed. This renders them fairly comparable with rates computed for other industries.

It is an important step toward general comparability that the Interstate Commerce Commission has in recent years required exposure to be reported in terms of man-hours.

"The table is of particular interest in view of recent discussion of the question, "Are accidents increasing?" In the course of that discussion it has become quite evident that our accident statistics are as yet neither sufficiently extended nor sufficiently precise to make possible a general answer to this question. There is a strong tendency to draw conclusions from current experience, and if the present year shows higher rates or greater cost than the preceding to suspect that this is an indication of a general tendency. The railway figures are accordingly important, because they have been gathered over a long enough period and with such a degree of accuracy as to justify regarding their indications as dependable. They afford an opportunity for testing the impression gained from current experience by the trend disclosed by a longer interval.

"In this case, as always, the really informative figures are the rates for fatality and injury. If the number of trainmen, of fatalities, and of injuries be considered separately, it will be difficult, if not impossible, to see clearly what the figures indicate. It is only when it is possible to unite the exposure with the number of cases or with the loss of time expressed in days, and so produce

FATALITY RATES (PER 1,000 HOURS' EXPOSURE)

Occupation	1916	1918	1920	1921	1922	1923	1924
Yard service:							
Engineers	0.23	0.17	0.14	0.22	0.21	0.18	0.11
Firemen	.45	.41	.28	.13	.09	.25	.08
Conductors	1.54	1.17	1.10	.78	.77	.89	.73
Brakemen	2.83	2.46	2.38	1.32	1.43	1.59	1.26
Total	1.69	1.44	1.34	.80	.84	.96	.74
Road freight service:							
Engineers	.74	.80	.63	.38	.52	.54	.40
Firemen	1.06	1.15	.78	.40	.47	.54	.43
Conductors	.94	1.25	.76	.71	.53	.74	.63
Brakemen	2.28	2.54	1.97	1.09	1.16	1.33	.93
Total	1.47	1.66	1.23	.73	.77	.89	.66
Road passenger service:							
Engineers	1.12	1.55	1.78	.95	1.05	1.12	.82
Firemen	1.32	1.34	1.37	.94	1.04	1.18	.82
Conductors	.19	.35	.19	.28	.09	.20	.11
Brakemen	.18	.58	.34	.22	.21	.23	.30
Baggagemen	.12	.31	.24	.12	.35	.17	.06
Total	.65	.90	.85	.55	.57	.63	.47
Total, all trainmen	1.38	1.46	1.20	.72	.76	.87	.65

frequency or severity rates, that the significance becomes evident. From the figures given for this railway group it is not possible to determine severity rates; frequency rates can be determined, however, and are given in the table.

"The following conclusions are drawn from inspection of the table:

"1. There was a marked drop in accident frequency from 1916 to 1924. This downward tendency is evident in each of the occupational groups. The fatality frequency for all trainmen declined 53 per cent and the injury frequency 40 per cent.

"2. There were two years during the period in which there is a decided upward tendency in accident frequency as compared with the preceding years. These years were 1920 and 1923. For all trainmen fatality rates rose 19 per cent from 1919 to 1920 and 14 per cent from 1922 to 1923. Rates for injury rose 23 per cent from 1919 to 1920 and 9 per cent from 1922 to 1923.

"3. As a rule there was a drop in accident frequency from 1916 to 1920 and a further drop from 1920 to 1923.

"4. For fatalities the lowest frequency rates occurred in 1924, while the lowest year for injuries was 1921.

"These figures are quite conclusive that whatever may be true of other industries American railways have maintained a successful fight against conditions which tend toward increased accident rates.

"The December, 1925, statistical bulletin of the Metropolitan Life Insurance Co. (p. 2) shows that among the white, male, industrial-policy holders 15 years and over there has been a definite downward trend in fatal accidents from 1912 to 1924. This downward movement amounts to about 1 per cent a year. Fatalities due to machinery have declined in the same period at about the rate of one-half of one per cent per year."

After giving comparative tables showing the number of trainmen in service and the number of fatalities and injuries, the article gives a table showing fatality rates per 1,000,000 hours' exposure which is here condensed.

Progressive Elimination of Grade Crossings Recommended

WASHINGTON, D. C.

THE final report of the National Conference on Street and Highway Safety, held at Washington March 23, 24 and 25, includes the following recommendations as to elimination and protection of grade crossings:

"Elimination of grade crossings, either by relocation of highways or rail lines or by grade separation which constitutes the only perfect solution of the problem, should be carried on under a proper program, first eliminating the most dangerous crossings on thoroughfares carrying heavy traffic, and with due recognition of the enormous costs involved which, if elimination were attempted on a wholesale scale, would impose an excessive financial burden resting in the last analysis upon the public. The program should have due regard to the relative costs and advantages of grade crossings elimination and other methods of protection, and should be given the most thorough joint consideration by proper authority. In laying out new highways or railroads, or relocating existing highways or railroads, grade crossings should be avoided or eliminated whenever feasible. In eliminating grade crossings narrow or obstructed underpasses and sharp turns in the approaches thereto should be avoided. Authority to order grade separations or proper protection at grade crossings should be vested in the commission having jurisdiction over the railways and this commission should also determine the proper division of costs between the railroads and the public. The state highway department or other highway authorities should plan the improvement and initiate the proceedings for all highways under its jurisdiction. Time is an essential element and a prompt decision should be provided for in the law.

"Railroad crossings remaining at grade should be safeguarded in every reasonable way. Standard warning signs and pavement markings should be used to clearly mark the approaches to all public railroad crossings. Where the volume of traffic requires it additional protection should be afforded by the use of flagmen, gates or approved electric or mechanical devices standardized as far as practicable. So far a possible clear view along the track in both directions from both sides thereof should be maintained. The placing of railroad cars near unprotected grade crossings so that the view is thereby obstructed should be discouraged. Sharp curves, abrupt changes of grade, roughness in the pavement, or other conditions at or near the tracks which tend to divert the attention of the motorist should be avoided. Properly designated state commissions should be empowered to designate dangerous grade crossings at which motorists must stop.

Urges Capitalization by Stock

WASHINGTON, D. C.

THE Interstate Commerce Commission in a report made public on March 30 denied the application of the Chesapeake & Ohio for authority to nominally issue $10,621,000 of first lien and improvement 20-year 5 per cent mortgage bonds, to reimburse the treasury for expenditures for additions and betterments and for the acquisition of the Sandy Valley & Elkhorn. The commission expressed the opinion that if the expenditures are to be capitalized it should be by an issue and sale of stock rather than bonds. Commissioner Woodlock, in a separate concurring opinion, while questioning the advisability of substituting the judgment of the commission for that of the company, argues in favor of the issuance of stock instead of bonds and points out objections to the practice of issuing terminable mortgage bonds. The report of Division 4 says in part:

No objection to the granting of the application has been presented to us. The applicant represents that it has expended between July 1, 1924, and August 31, 1925, $1,450,996.36 for additions and betterments to its property, for which it is entitled to draw down bonds under section 7 of article 2 of its mortgage and deed of trust dated December 1, 1910. The mortgage further provides that the applicant may draw down bonds in an amount of $5,000,000 a year, and not more than $2,500,000 at any one time, for the purposes stated in the mortgage, the bonds or the proceeds to be held separate and apart from all other assets and funds until appropriated for such purposes. The applicant proposes to draw down bonds under this provision for expenditures made or authorized subsequent to August 31, 1925. Pursuant to our order, the applicant acquired control of the Sandy Valley, by the purchase of all its capital stock at an aggregate cost of $6,671,568.09, and provision is made under said mortgage for the drawing down of bonds for acquisition of such character. The applicant therefore seeks to draw down first lien and improvement bonds as follows:

In respect of expenditures of $1,450,996.36 between July 1, 1924, and August 31, 1925	$1,450,000
In respect of expenditures to be made or authorized subsequent to August 31, 1925	2,500,000
In respect of the cost of $6,671,568.09 in the acquisition of control of the Sandy Valley & Elkhorn	6,671,000
Total	$10,621,000

It is not proposed to sell the bonds at this time, but to hold them subject to our further order.

In our report in 99 I. C. C. 553, *supra*, it is stated that "no securities are to be issued to finance the acquisition cost" of the Sandy Valley & Elkhorn. However, counsel in that proceeding has stated that he did not interpret such statement to preclude the reimbursement of its treasury for the cost of acquisition, but that it referred to a direct issue for the purpose of immediate financing. In its application in Finance Docket No. 2541, the applicant stated that "increasing the amount of capital stock relative to funded debt increases safety since thereby no addition is made to fixed charges. The effect of financing with stock should be to improve the credit of the railway company and to enable it to borrow on more favorable terms in the future * * *. The * * * stock * * * will be a high-grade investment security and as the event has shown is readily salable." Since the filing of that application the stocks of the applicant, according to market quotations, have not suffered from the standpoint of salability. It is our opinion that if the cost of acquisition of the Sandy Valley & Elkhorn is to be capitalized by issue of securities, it should be by the issue of stock rather than bonds, and we are also of the opinion that when, as and if the company's treasury is to be reimbursed for the expenditures made and to be made for additions and betterments as stated in the application, it should be by an issue and sale of stock rather than bonds.

The applicant states, as one necessity for capitalizing additions and betterments at this time, "that applicant contemplates the unification of its railroad with certain other railroads pursuant to application under consideration by the commission in Finance Docket No. 4671, and it is necessary, in order properly to effect the financing and accounting for additions and betterments on the applicant's line made prior to the effective date of such unification, that applicant's own securities be drawn against these additions and betterments before such unification is carried into effect." Since the application referred to was denied by our order of March 2, 1926, in *Nickel Plate Unification*, 105 I. C. C. 425, that necessity is obviated.

Commissioner Woodlock in his opinion said:

The applicant is one of a comparatively small group of carriers which are in the enviable position of being able to sell common stock at par or better. Its earnings and its present dividend rate afford ample opportunity for doing this to a liberal amount at the present time, and there is every indication that this will continue to be true in the future, given capable management and prudent expenditure of capital. This being so, it would be highly regrettable if so good an opportunity were neglected, in view of the serious objections that exist to the financing of railroads by terminable mortgage bonds with foreclosure rights.

These objections are twofold, one being absolutely fundamental in its nature, and the other being of almost equal practical importance. The use of terminable mortgage bonds to secure railroad capital is an offence against the very nature of the case. A railroad does not naturally return capital once it has been invested; on the contrary, it is always engaging more capital as time goes on. When, therefore, it undertakes to pay a considerable sum of money at a fixed date under the terms of a mortgage, it can pay the maturing obligation only by raising new capital. Usually the maturing obligation is met Micawber-fashion, by issuing a new note for the old one. This process is commonly called "refunding"—a term which Mr. Micawber would have joyfully added to his vocabulary had he been lucky enough to discover it. Granted that financing by terminable mortgage bond issues may in the past have been forced upon the carriers by necessity, or seeming necessity, it is certain that any road that opens itself whereby the railroads can escape from a continuance of such a practice, is a good road to take. We have had within twelve months, in the case of the Chicago, Milwaukee & St. Paul receivership, a striking demonstration of where the old road leads. The second objection arising from the fastening upon a railroad of a fixed charge obligation with foreclosure penalties in the background, needs but to be mentioned.

Two generations of this sort of financing have left most of the carriers in the United States with capital structures overweighted with terminable fixed obligations, carrying rights of foreclosure. About 60 per cent of railroad investment is represented by securities of this class. The extreme desirability of using for capital purposes a security which does not mature for repayment at a fixed date, and the return on which is not secured by foreclosure rights against the property, is so evidently desirable that dispute as to merits is impossible. Comparatively few carriers are so prosperous that their stock capital is valued in the market in excess of its nominal par. It is because of the obstacle raised by this nominal par value to financing by stock sales on a relatively wide scale that I favor the use of stock without par value as a form of railroad capitalization. Without entering at this time into a discussion of the merits and demerits of this form of share capital, I desire to point out that from the point of view of accounting, it is the most logical form of stock capitalization, and that it can be easily so safeguarded as to possess all advantages that can possibly be attributed to the use of stock with par value, together with its own peculiar advantage arising from complete flexibility of sale. There is, however, no necessity to consider it in the case of this applicant, for the applicant's stock is selling at a handsome premium.

The terms of the transportation act, literally construed, give to this commission very broad powers with respect to the issue of securities by railroad corporations. In relying, however, as Congress deliberately did upon private capital, management and enterprise, for efficient transportation service, Congress, by implication, instructed us in carrying out our regulatory task to leave to management all possible scope, subject to considerations clearly affecting the public welfare. So many of the activities of railroad carriers are now directly subject to definite control by this commission, that the zone of free action available to management is considerably circumscribed. That portion of the zone wherein lie questions of finance, is perhaps the largest part of the whole. In my judgment, it is our duty to avoid entering upon that zone save upon the clearest evidence of public necessity. Unless a course of action proposed to us by managers of a railroad corporation definitely threatens the public welfare, it is, I think, our duty to refrain from interfering with managerial judgment, even though the law, literally construed, may give us the power to do so. That I believe to be the spirit of the transportation act. If Congress had not intended to leave to private management at least some substantial zone of activity, it would not have relied upon it for the kind of transportation that it was seeking.

I have concurred in the report in the instant case mainly because the application before us did not involve the actual issue and sale of securities by the applicant corporation at this time. I think it is an unusually clear case so far as concerns the question of what is the wisest policy for the management to follow, the facts being what they are. Nevertheless, clear as is this case, I am in doubt that, in the event that the question of security issue and sale were now before us, it would be our duty to substitute our decision for that of the managers of the corporation. The irony in the case is that it is companies whose prosperity is so great as to make financing by common stock possible which can, in fact, most safely issue mortgage bonds.

General News Department

Train porters are now employed on six through trains of the Pennsylvania between New York and Pittsburgh; Numbers 34, 26 and 8, eastbound, and Numbers 27, 33 and 9, westbound. The first four of these are day trains; No. 33 starts at 2:10 p. m. and No. 9 is a night train.

The bill of the Quebec government providing for an annual grant of $50,000 for five years for the Canadian National branch lines from O'Brien on the National Transcontinental south 50 miles to Rouyn in northwestern Quebec was passed in the Quebec Legislature last week.

Express policemen may now be appointed in the state of New York on the application of an express company operating over a steam railroad, in the same way that "railroad police" are appointed; this under an amendment to the law which has just been adopted by the legislature. Individual officers are appointed by the superintendent of state police.

A widespread storm has this week caused innumerable train delays on railways in the middle West of from one to nine hours; a twelve-inch snow fall resulting from a two-day "blizzard," beginning on March 30. The worst delays were caused by the drifting snow, west and southwest of Chicago. The only instance of great inconvenience caused by the storm was the delay overnight of a passenger train on the Big Four in central Illinois. Service was generally back to normal by Friday.

Canadian Railway Club Meeting

C. F. Macdonald, freight claim agent of the Boston & Maine at Boston, Mass., will read a paper on Freight Claims at the April 13 meeting of the Canadian Railway Club to be held at the Windsor Hotel, Montreal.

April Meeting of Central Railway Club

Development of Transportation in Buffalo and to Niagara Frontier is the subject of a paper to be presented by Fred M. Renshaw, traffic commissioner, Chamber of Commerce, Buffalo, N. Y., at the April 8 meeting of the Central Railway Club at the Hotel Statler, Buffalo.

Correction

An error occurred in giving the window dimensions in the Northern Pacific observation club car article, beginning on page 803 of the March 13 *Railway Age*. The second sentence in the fourth paragraph on page 804 should read, "The window at the rear end of the observation room is said to be the largest ever used in car construction, measuring 4 ft. 2 in. in height by 5 ft. in width." This height was incorrectly given as 5 in.

Pacific Railway Club Elects Officers

The annual meeting and banquet of the Pacific Railway Club, at which R. H. Aishton, president of the American Railway Association, was the guest of honor, was held at San Francisco, Cal., on March 11, and was attended by 281 members and their guests. The club elected the following officers to serve during the present year: President, J. A. Christie, superintendent, Atchison, Topeka & Santa Fe, San Francisco; first vice-president, W. T. Small, general superintendent of motive power and equipment, Northwestern Pacific, Tiburon, Cal.; second vice-president, D. A. Porter, division engineer, Southern Pacific, Oakland, Cal.; treasurer, R. G. Harmon, chief clerk, traffic department, Western Pacific-Denver & Rio Grande Western, San Francisco. William S. Wollner, who has been the executive secretary of the club since its organization, continues in that capacity.

New York Central to Celebrate Centenary

The New York Central proposes to have a celebration on Saturday, April 17, of the one hundredth anniversary of the granting by the state of New York of the charter of the Mohawk & Hudson, from Albany to Schenectady, now a part of the New York Central main line. This is the road on which, five years later, the locomotive DeWitt Clinton drew the first regular passenger train in the state of New York. Plans are being made for a dinner at the Waldorf Astoria Hotel, New York City, in the evening of the 17th.

January Fuel Statistics

Class I railways of the United States in January consumed 9,155,429 tons of fuel coal in the operation of freight and passenger train service, at an average cost of $2.61 per ton, according to the monthly bulletin of railway fuel statistics issued by the Interstate Commerce Commission. In January, 1925, the roads used 9,209,439 tons, at an average cost of $2.81 a ton. The roads also used 180,621,590 gallons of fuel oil at an average cost of 2.88 cents a gallon, as against 185,217,432 gallons in January, 1925, at an average cost of 2.87 cents. The total cost of coal and fuel oil in January was $29,126,599, as compared with $31,207,876 in January, 1925.

The cost of coal per net ton in January ranged from $1.75 in the Pocahontas region to $4.59 in the New England region.

A. T. C. Orders Modified

The request of the Great Northern that the order of the Interstate Commerce Commission requiring it to install automatic train control be modified, so as to permit an installation between New Rockford, N. D., and Minot, N. D., instead of between Williston, N. D., and Wolf Point, Mont., was granted in an order made public on March 30. The commission also exempted from the application of the order the locomotives of the Devil's Lake district, which run for about four miles over the double track between Surrey and Minot, N. D.

The Interstate Commerce Commission has granted a petition of the Lehigh Valley, the Reading and the Baltimore & Ohio for an extension of time to September 1 for the fulfillment of the commission's automatic train control order as to the Lehigh Valley.

A. R. A. Purchases Draft Gear Drop Test Machine

The American Railway Association has authorized an appropriation for the purpose of building, installing and housing a drop-test machine for testing draft gears to determine their capacity, absorption of recoil and endurance, and from the information obtained prepare suitable specifications under which the railroads may purchase draft gears that are known to meet the prescribed standards of efficiency. It will also be used to obtain information that will be of assistance in developing draft gears generally. The contract for the machine has been awarded to the Tinius-Olsen Testing Machine Company, Philadelphia, Pa., delivery being called for by November 1, 1926, and arrangements are being made to have it installed at one of the engineering universities.

The machine will be provided with two falling weights or tups. The larger one will weigh 27,000 lb. and is believed to be heavier than any heretofore used for the purpose, while the smaller one will weigh 9,000 lb., the weight most frequently used in the past. The weights may be readily removed or applied without dismantling the vertical columns.

The machine will be driven electrically, the control equipment being so designed that operation may be manually or automatically controlled, and it will be provided with a chronograph for recording the action of the draft gear or gears being tested throughout the cycle of compression and release.

New Equipment

Class I railroads during the first two months this year installed in service 12,817 freight cars as compared with 28,120 installed during the corresponding period in 1925 and 27,729 in 1924, according to reports filed with the Car Service Division of the American Railway Association.

Of the total 7,910 were placed in service in February, including 4,303 box cars, 2,845 coal cars and 337 refrigerator cars. Freight cars on order on March 1 totaled 50,947 including 22,140 box cars, 19,753 coal cars and 6,627 refrigerator cars. Class I railroads on March 1 last year had 50,629 freight cars on order while on March 1, 1924, they had 45,074 freight cars on order. Class I railroads during the first two months this year also installed in service 366 locomotives, as compared with 292 installed during the same period last year and 485 during the same period in 1924. Locomotives placed in service during the month of February totaled 175. Locomotives on order on March 1 this year totaled 441 compared with 293 on the same date last year and 457 on the same date in 1924.

These figures as to freight cars and locomotives include new, rebuilt and leased equipment.

The Canadian Roads in February

The Canadian Pacific in February this year earned an operating net higher than any February since 1918, while the net for the first two months of this year showed an increase of 125 per cent over the same period last year.

Following are the gross earnings, operating expenses and net for the month of February and for the first two months, with comparisons:

	February		
	1926	1925	Increase
Gross	$12,613,008	$11,786,710	$826,297
Operating expenses	10,707,977	10,632,009	75,967
Net	$1,905,030	$1,154,700	$750,330
Two months:			
Gross	$26,083,139	$23,683,223	$2,399,915
Operating expenses	22,376,250	21,944,754	431,495
Net	$3,706,889	$1,738,469	$1,968,419

During February this year the gross earnings of the Canadian National were $17,693,338, an increase of $1,207,296, or 7.32 per cent, as compared with the same period in 1925. Operating expenses showed an increase of $510,619, or 3.22 per cent, and the net earnings for the month amounted to $1,308,401, an increase of $696,677, or 113.89 per cent.

The summary is as follows:

February	1926	1925	Inc.
Gross	$17,693,338	$16,486,042	$1,207,296
Op. exp.	16,384,937	15,874,318	510,619
Net	$1,308,401	$611,724	$696,677
Two months:			
Gross	$35,749,259	$33,202,510	$2,546,749
Op. exp.	32,803,217	32,317,984	485,233
Net	$2,946,042	$884,526	$2,061,516

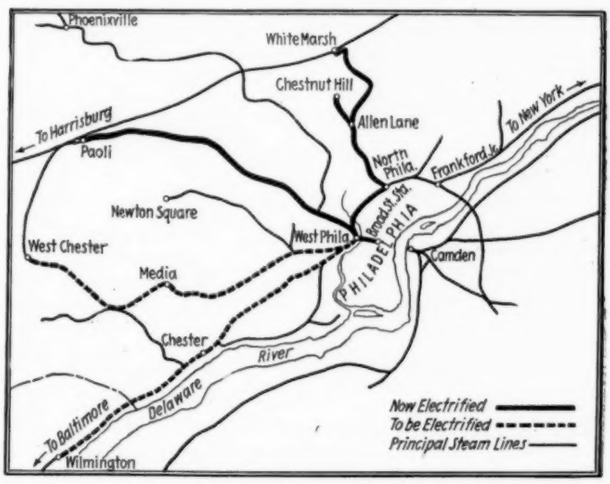
Pennsylvania to Extend Philadelphia Suburban Electrification

The Pennsylvania plans early electrification of its lines between Philadelphia, Pa., and Wilmington, Del., and between Philadelphia and West Chester, Pa., via Media. Work on this step in carrying out the program for the ultimate electrification of all suburban lines in the Philadelphia district will be started soon and is scheduled for completion in 1927. It is estimated that the total cost will approximate $10,000,000 exclusive of new electrically equipped cars which will be required.

The directors authorized last fall an expenditure to place underground all telegraph, signal and telephone wires on the Philadelphia Terminal division and the Maryland division between West Philadelphia and Wilmington. This step is preparatory to electrification, and the contract has been awarded and the work is under way.

Electrification of the lines to Wilmington and West Chester is an integral feature of the development of the new passenger station project on the west bank of the Schuylkill river and the subway extension and subway station for suburban traffic at Fifteenth street and the Parkway, Philadelphia. In respect to mileage, it will constitute the most extensive project of the kind on the road, involving four tracks between Philadelphia and Wilmington with double and single track sections between Philadelphia and West Chester. The total number of miles of line electrified will be about 52 and the total number of miles of track will be about 150. The distance to Wilmington is 27.1 miles and to West Chester, 25.5 miles. The total number of miles of line included in the present Paoli, Chestnut Hill and Fort Washington branch electrifications is about 38, with nearly 114 miles of track.

Electrification of suburban lines is necessary before service can be operated through the subway extension to the new underground suburban station, under the terms of the agreement between the company and the city in connection with the construction of a new passenger station in West Philadelphia. Electrical construction and equipment on the new lines will be of the same general types as those used on the Paoli and Chestnut Hill lines. The system



The Pennsylvania's Proposed Extension of Electrification at Philadelphia

of traction will be single phase, 25 cycle, alternating current. The transmission line will carry 132,000 volts, with a normal voltage of 11,000 in the trolleys.

Current will be supplied to sliding pantograph trolleys on the multiple unit cars through a system of overhead catenary construction, comprising a main messenger, auxiliary messenger and a contact trolley wire. These wires and hangers will be of non-corroding materials. Trolley wires for two tracks will be carried on brackets attached to tubular steel poles, but trolleys for more than two tracks will be supported by cross catenaries. Two single-phase, two-wires signal power circuits will be carried on the catenary structures. Signal control circuits and telephone and telegraph wires between Philadelphia and Wilmington will be in cable and laid underground, and on the West Chester lines these circuits will be either in aerial cable or open wire. The company will buy about 125 new multiple unit cars for the Wilmington and West Chester service.

C. of N. J. Seeks Reconsideration of Critical I. C. C. Report

Reconsideration by the Interstate Commerce Commission of its report of December 15, 1925, which criticized the Central of New Jersey for the prices paid by it for repairs to its locomotives at outside shops in 1921 and 1922, is asked in a petition filed by W. G. Besler, president of the Central of New Jersey. The petition says that "the conclusion reached by the commission 'that the excess expenditures under the Crucible contract represent improvidence in management' appears to be based upon findings of fact stated in the report, which findings reflect merely the assertions made by the commission's field investigators at the initial hearing and disregard uncontroverted evidence submitted by the petitioner's officers in refutation of said assertions. The conclusion that the alleged excess expenditures under the Crucible contract 'should be considered when fixing rates' is not only unsupported by evidence but is legally unsound and should be eliminated from the report."

Capital Expenditures in 1925

Class I railroads during the year 1925, according to reports tabulated by the Bureau of Railway Economics expended $754,000,000 in the form of capital expenditures for new equipment, improvements to facilities and extensions; 45 per cent or $339,000,000 for new equipment and 55 per cent or $414,600,000 for additions and betterments. Total capital expenditures for four years amounted to $3,117,000,000, or an annual average of about $780,000,000. The totals for each year were:

1922	$429,000,000
1923	1,059,000,000
1924	875,000,000
1925	754,000,000

Despite the remarkable record for efficiency which has been increasing since the railroads were returned to private control in 1920, they have not earned the "fair return" named by the commission (5¾ per cent).

The rate of return earned by the Class I roads and large switching and terminal companies for five years has been:

Year	Actual rate earned on Property investment per cent	Actual rate earned on Tentative valuation, per cent
1921	2.92	3.33
1922	3.61	4.41
1923	4.48	5.22
1924	4.33	5.01
1925	4.83	5.63

The amount of shortage under a fair return on the tentative valuation has been:

Year	Shortage
1921	$492,351,000
1922	306,764,000
1923	98,907,000
1924	146,463,000
1925	23,826,000
Total	$1,068,311,000

The fact that the smallest shortage occurred in 1925 is a partial reflection of heavy freight traffic on the one hand and the high level of operating efficiency and economy on the other.

Meetings and Conventions

The following list gives name of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 4-7, 1926, Hotel Roosevelt, New Orleans, La. Exhibited by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—John B. Wright, Westinghouse Air Brake Co., Pittsburgh, Pa. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF ENGINEERS.—H. Almert, 63 E. Adams St., Chicago. Next convention, June, 1926, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—Grant Williams, 1341 Railway Exchange, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, June 1, 1926, Atlantic City, N. J.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, June 15-18, 1926, Montreal, Quebec, Canada.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—T. E. Welsh, Chicago, North Shore & Milwaukee, Highwood, Ill. Next convention, 1926, Baltimore, Md.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York. Annual convention, October 4-8, 1926, Cleveland, Ohio.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamilton Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

Division I.—Operating—J. C. Caviston, 30 Vesey St., New York. Freight Station Section (including former activities of American Association of Freight Agents).—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, April 20, 1926, The Adolphus Hotel, Dallas, Tex.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association.)—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, June 23-24, 1926, Mount Royal Hotel, Montreal, Canada.

Safety Section 7—J. C. Caviston, 30 Vesey St., New York. Next meeting, April 27-29, 1926, Hotel Statler, St. Louis, Mo.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents).—W. A. Fairbanks, 30 Vesey St., New York. Next meeting, Sept. 21-23, 1926, Swampscott, Mass.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago, Ill. Next meeting, April 15, 1926, Peabody Hotel, Memphis, Tenn.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electric Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York, N. Y. Next meeting, September 7-9, Hotel Ambassador, Los Angeles, Cal.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 9-16, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Next meeting, September 21-23, 1926.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Next meeting, June 9-11, 1926, Vernon Room, Haddon Hall Hotel, Atlantic City, N. J.

Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, October, 1926, Richmond, Va. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—H. W. Byerly, General Immigration Agent, Northern Pacific, St. Paul, Minn. Annual meeting, June 23-25, 1926, Vancouver, B. C.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association Division IV.)) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, September 1-3, 1926, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, 1315 Spruce St., Philadelphia, Pa. Annual meeting, Atlantic City, June 21-25, 1926.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—George T. Seabury, 29 W. 39th St., New York. Spring meeting, April 14-16, Kansas City Athletic Club, Kansas City, Mo. Regular meetings 1st and 3rd Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division. Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, 10 East Huron St., Chicago, Ill. Biennial convention, July 18, 1927.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—E. J. Stocking, 111 West Washington St., Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual meeting, May 18-20, 1926, Los Angeles, Calif.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual meeting, October 27-30, 1926, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—S. A. Witt, Detroit Lubricator Co., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—Fred M. Condit, Fairbanks, Morse & Co., Chicago. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.— C. R. Crook, 129 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—R. E. Giger, 721 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Courtland St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHICAGO CLAIM CONFERENCE. Personal Injury Section.—F. L. Johnson, Chicago & Alton R. R., 340 Harrison St., Chicago. Meets 12:30 p. m., first Monday each month, Sherman Hotel, Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Rookery Bldg., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND STEAM RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, Hotel Cleveland, Public Square, Cleveland.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C. Annual meeting, May 13, 1926, Railroad Club, New York.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, August 17-19, 1926, Hotel Winton, Cleveland, O. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—Edwin T. Jackman, 710 W. Lake St., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Office of Permanent Commission of the Association, 74 rue du Progrès, Brussels, Belgium. General secretary, P. Ghilain. Next session of the Congress, Spain, 1926.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. B. Hutchison, 1809 Capitol Ave., Omaha, Neb. Annual convention, May 11-14, 1926, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—F. P. Roesch, 1942 McCormick Bldg., Chicago. Earl E. Thulin, assistant secretary, 715 Peoples Gas Bldg., Chicago. Meeting with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION—Harry D. Vought, 26 Courtlandt St., New York. Next meeting, May 25-28, 1926, Hotel Statler, Buffalo.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Div. V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

MOBILE TRAFFIC & TRANSPORTATION CLUB.—T. C. Schley, 71 Conti St., Mobile, Ala. Regular dinner meetings, 6 p. m., on 2nd Thursday of each month, Cawthon Vineyard, Mobile, Ala.

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—F. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next convention, 1927, Nashville, Tenn.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Annual convention, November 9, 1926, Asheville, N. C.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Annual convention, April 28-30, 1926, Charleston, S. C.

NATIONAL HIGHWAY TRAFFIC ASSOCIATION.—Elmer Thompson, 12 East 53rd St., New York. Annual meeting, April 30, 1926, Automobile Club of America, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 845 South Wabash Ave., Chicago. Annual exhibition at convention of American Railway Engineering Association.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: E. R. Cott, Safety Agent, Hocking Valley Ry., Columbus, Ohio.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

PURCHASES AND STORES DIVISION.—(See American Railway Association, Division VI.)

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Next annual convention, June 8-11, 1926, Chateau Frontenac, Quebec, Canada.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa.

RAILWAY CAR MANUFACTURERS' ASSOCIATION.—W. C. Tabbert, 61 Broadway, New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—Joseph Sinkler, Pilot Packing Co., Peoples Gas Bldg., Chicago. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 12, 1926.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, Room 1243, Transportation Building, Chicago.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV., Signal Section).

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, A. R. A., June 9-16, Atlantic City, N. J.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Next convention, September 21-23, 1926, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—J. E. Rubley, Southern Railway Shop, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. L. Carrier, Car Serv. Agent, Tenn. Cent. Ry., 319 Seventh Ave., North Nashville, Tenn.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—W. R. Mau, Vanadium Alloys Steel Co., Latrobe, Pa.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, Ohio. Annual meeting, September 14-17, 1926, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 226 West Jackson Boulevard, Room 1001, Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago, Ill.

Traffic News

The Minneapolis & St. Louis has opened a city ticket and freight traffic office at 15 Washington avenue, South, Minneapolis, Minn. Heretofore the company has maintained passenger offices jointly with the Chicago & North Western.

A demand for the abolition of the Pullman surcharge, which has been neglected in the present session of Congress, was made in a long speech in the House on March 25 by Representative McLaughlin of Nebraska, who has a bill pending for that purpose and who was one of the leaders in the unsuccessful fight for such legislation at the last session. He insisted that it would not be Congressional rate-making to pass a bill relating to a "policy" of this kind, and he inserted in the Record many extracts from articles in financial papers regarding the earnings of the most prosperous railroads to show that the roads no longer need the surcharge.

Reduction of Freight Rates in Emergencies

The Senate on March 30 passed the bill introduced by Senator Mayfield of Texas, S. 3286, to provide that nothing in the interstate commerce act shall prevent any carrier subject to the act from giving reduced rates for the transportation of property to or from any section of the country "with the object of providing relief in case of earthquake, flood, fire, famine, drought, epidemic, pestilence or other calamitous visitation or disaster," on authorization by the Interstate Commerce Commission.

Florida Embargo Modified

The Car Service Division of the American Railway Association on March 25 announced a further modification of the Florida embargo. Effective March 26, the embargo on carload shipments entering Jacksonville was entirely removed so far as that terminal alone is concerned. It was also modified on all other commodities, consigned to points south of Jacksonville, with the exception of brick, cement, building tile and lumber (except crate material and car strips). The modification will not affect the plan by which permits must be obtained in order to secure shipments at points south of Jacksonville of the commodities which continue to be included under the embargo order.

Quebec Wants Lower Grain Rate

An application by the Quebec Harbor Commission for a 11.75 cent per bushel rate on wheat from Armstrong to Quebec on the National Transcontinental (C. N. R.) a distance of 958 miles—was heard by the Dominion Railway Board last week in connection with the general freight rates investigation ordered by Parliament at the 1925 session, and judgment was reserved. The present grain rate complained of is 20.7 cents per bushel. In 1916, it was argued, there was a 6-cent rate in effect for a few months and it proved an assistance to Quebec, but the rates were later raised and since that year scarcely a bushel of grain had come to Quebec over the Transcontinental, although there was at Quebec elevator capacity of 2,000,000 bushels.

Sub-Division of Western District Urged

Sub-division of the western district, so that increases in freight rates may be allowed to the northwestern railroads without making them applicable to other parts of the district, is urged in a brief filed with the Interstate Commerce Commission by the Los Angeles Chamber of Commerce in Ex Parte 87. "The record is replete," says H. R. Brashear, traffic manager of the Chamber of Commerce, "with testimony of carrier representatives to show the serious plight of the railroads of the Northwest. We do not contend that the carriers should not be accorded a basis of rates which will bring them a greater revenue. We do contend, however, that the needs of the carriers in the northwestern region differ substantially from the needs of the carriers in the central

western regions, and we seriously object to the use of figures advancing the needs of the northwestern carriers as a basis for determining the needs of the roads in the western district as a whole. We offer no objection to the proposal of shippers in the southwestern region carving out their territory and seeking a different treatment for the southwestern lines."

Postmaster General Objects to Newspapers' Intervening in Mail Rate Case

The postmaster general has written to the Interstate Commerce Commission objecting to the request of the American Newspaper Publishers' Association for reconsideration of the railway mail pay case. He says: "This is a special statutory proceeding between the United States and the railroads, in which the United States in its governmental capacity represents all the people of the United States, and in which no other person or body of persons may be permitted to intervene over the objection of the United States. The business of collecting, handling and distributing the mails, as carried on by the United States postal service, has always been and still is conducted solely by the United States government. No citizen of the United States has any interest in the compensation paid to the railroads for the carriage of the United States mails, except that indirect interest, shared in common with all other citizens of the United States, all of whom are adequately represented in this proceeding by the United States in its sovereign capacity."

Southern Pacific Revises Schedules

The Southern Pacific has inaugurated additional service and faster schedules between New Orleans, La., and Los Angeles, Cal., beginning April 4. The Argonaut, a new daily train, will leave New Orleans at 11 p. m. and will arrive in Los Angeles at 10:25 the third morning. Eastbound it will leave Los Angeles at 5 p. m., El Paso at 7:15 p. m. the next day and will arrive in Houston at 8:35 p. m. a day later and New Orleans 11 hours from Houston (7:35 a. m.). Trains now known as 7 and 8, which are being operated at present only between New Orleans and Del Rio, Tex., will be run through to and from California and will be known as the Sunset Mail. The westbound train will leave New Orleans at 11:25 a. m. which is 20 min. later than the present schedule and will arrive in Houston at 10:25 p. m., San Antonio at 7 a. m. the next morning, El Paso at 7 a. m. the second morning, and Los Angeles at 7:30 a. m. the following day.

Through sleepers will be operated out of Dallas by way of San Antonio to California. This sleeper will be handled on the Sunbeam, leaving Dallas at 1:25 p. m., and connecting with the Sunset Limited at San Antonio.

Traffic Prospects to May First

The Car Service Division of the American Railway Association estimates that loading of revenue freight for the first four months in 1926 will total 16,555,576 cars; or 86,968 cars (.53 per cent) above the total for the corresponding period in 1925. This estimate is based on information from various sources including reports from the various Shippers' Regional Advisory Boards. The number of cars actually loaded with revenue freight from January 1 to March 6, the latest figures available, was 9,073,140, an increase of 61,100 cars or .68 per cent over the same period in 1925.

The present freight traffic now being offered the railroads is being handled without difficulty of any kind, except in Florida, where the embargo on building construction and road building materials is still in effect. The supply of refrigerator cars and coal cars is generally adequate for all needs.

Bituminous coal produced during the first six weeks in 1926 totaled 75,269,000 tons, an average of 12,545 tons a week, the highest production for any similar period, yet no serious shortage of cars occurred. In 1925 the maximum car shortage was 435 cars per day.

In Florida additional lines have been extended in many parts of the state and facilities have been greatly expanded. The organization of the Florida division of the Southeast Shippers' Regional Advisory Board served to meet the abnormal demands beginning last October.

The need to improve the transportation capacity of the railroads in that state for the current handling of additional business. This was brought about automatically by the completion of improvement programs by the Florida railroads. At one time there was an accumulation of approximately 10,000 cars north of the Florida gateways and destined to that state. Under the operation of the permit system, this accumulation was cleaned up early in January, so that it was possible to modify materially the statewide embargo on February 22.

Northwestern States Oppose Separate Rate Group

Northwestern state railroad commissions, in a brief filed with the Interstate Commerce Commission, oppose the proposal made by the state commissions of the Southwest for the creation of a separate rate group in the Southwest. In the case involving the application of the western railroads for a general rate increase and also the commission's general investigation of the rate structure a petition was filed by the state commissions of Oklahoma, Arkansas, Texas, Louisiana, Missouri and Kansas, asking the commission to create a separate rate group. Various commercial organizations of the Southwest later intervened, approving the petition so made but asking for the inclusion of other or different territory. Opposition to the creation of such a separate rate group was promptly recorded by various other state commissions of the western district.

"It conclusively appears," says the northwestern brief, "that no such fundamentally different conditions exist in the area proposed for a new southwestern group. In fact there is nothing in the record here to show any permanently different conditions whatsoever. The testimony introduced by the proponents of a southwestern rate group was more argumentative than informative; and the evidence as a whole rested upon temporary conditions and was fragmentary and inconclusive. * * *"

Freight Traffic in January

The volume of freight traffic handled by the Class I railroads in January amounted to 37,678,286,000 net ton miles, according to reports compiled by the Bureau of Railway Economics. This was an increase of 652,630,000 net ton miles or 1.8 per cent above the total for January last year and an increase of 3,168,000,000 net ton miles or 9.2 per cent over 1924. Compared with January, 1923, it was, however, a decrease of 28,342,000 net ton miles or one-tenth of one per cent.

In the Eastern district in January, freight traffic showed an increase of 2.8 per cent over the same month last year while in the Southern district there was an increase of 12.3 per cent. The Western district showed a decrease of 3.7 per cent.

The daily average movement of freight cars in January was the highest for any January on record, according to reports compiled by the Bureau of Railway Economics. The average was 27.5 miles per day, an increase of 1.1 miles over that of January, 1925, and 2.6 miles above that of January, 1924. It also was an increase of 1.7 miles above that of January, 1923.

The average load per freight car in January was 27.6 tons, two-fifths of a ton less than that of January last year and one-tenth of a ton below that of January, 1924. It also was 1.4 tons below that of January, 1923.

Motor Transport News

Hearings on Bill to Regulate Highway Transportation

The Senate committee on interstate commerce, after devoting a week to hearings on the bill introduced by Senator Cummins for the regulation of highway motor transportation, brought them to a temporary close on March 29 for the purpose of considering in executive session whether there is sufficient chance for legislation on the subject at this session of Congress to make it worth while to continue with the hearings. An opening statement on behalf of the bill was made by John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners, which had drafted the bill, and other testimony was given for and against it. Organizations representing operators of motor trucks gave arguments against subjecting their rates to regulation and there was also some objection to the requirement of certificates of public convenience and necessity. Alfred P. Thom, general counsel of the Association of Railway Executives, asked to be heard on the constitutional questions involved if the hearings are to be resumed.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has suspended from March 29 and April 8 until July 27 tariffs published by the Chicago, Rock Island & Pacific which propose to reduce rates on grain and grain products from stations in Oklahoma to stations in New Mexico.

The Interstate Commerce Commission has suspended from March 29 until July 27 schedules published in Supplement No. 42 to Agent H. Wilson's tariff I. C. C. No. A-121, which propose to cancel the application of classification Rule 25 rating on cotton blankets from Baltimore, Md., to western points via rail-lake-and-rail routes.

B. & M. Milk Rate Suspended

The Interstate Commerce Commission has suspended from April 1 until July 30, tariffs proposing increase rates on milk and milk products approximating 20 per cent between points in New England. A hearing has been set for April 20 in Boston and the commission has invited to sit with it the commissions of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut and New York.

Rules of Practice Amended

The Interstate Commerce Commission on March 26 announced a modification of its rules of practice designed to reduce the number of papers required in proceedings before it.

Rule XIII, paragraphs *b* and *c* is amended to read as follows:

(b) In case any matter contained in a report or other document, not a tariff schedule, on file with the commission is offered in evidence such report or other document need not be produced or marked for identification but in other respects the provisions of the foregoing subdivision (a) of this rule will apply. In case any portion of the record before the commission in any proceeding other than the one on hearing is offered in evidence a true copy of such portion shall be presented for the record in the form of an exhibit, unless

(1) the party offering the same agrees to supply such copy later at his own expense if and when required by the commission; and (2) the portion is specified with particularity in such manner as to be readily identified; and (3) the parties represented at the hearing stipulate upon the record that such portion may be incorporated by reference, and that any other portion offered by any other party may be incorporated by like reference subject to this paragraph; and (4) the presiding commissioner or examiner directs such incorporation.

Any portion so offered, whether in the form of an exhibit or by reference, shall be subject to appropriate objection.

When exhibits of a documentary character are to be offered in evidence copies must be furnished to opposing counsel, unless the presiding commissioner or examiner otherwise directs.

(c) In case any matter contained in a tariff schedule on file with the commission is offered in evidence, such tariff schedule need not be produced or marked for identification, but the matter so offered shall be specified with particularity. All exhibits showing rates, fares, charges, or other tariff provisions must, by appropriate I. C. C. number reference, indicate the tariff authority therefor, and if distances are shown must also show the authority therefor and, by lines and junction points, the routes over which the distances are computed.

Personnel of Commissions

R. A. Lacey has been appointed assistant supervisor of accounts of the accounting section, bureau of valuation, Interstate Commerce Commission, with headquarters at Washington, D. C., succeeding R. W. Fletcher, who has resigned.

Labor News

The United States Railroad Labor Board has granted an increase in wages of from $8 to $15 a month, retroactive to December 1, 1923, to train dispatchers employed by the Maine Central.

The Louisville & Nashville, according to press dispatches of March 31, has increased the pay of mechanics in its shops two cents an hour and the pay of unskilled laborers in shops one cent an hour; number of men affected 8,000 and 5,000.

The Virginian has rejected the request of train-service employees, represented by the Order of Railway Conductors and the Brotherhood of Railroad Trainmen, for wage increases, and has submitted to the Railroad Labor Board an *ex parte* request for a revision of the working rules.

Express Company Refuses to Increase Wages

The American Railway Express Company has finished a series of conferences with the International Brotherhood of Teamsters, the Brotherhood of Railway Clerks, the American Federation of Express Workers and Order of Railway Expressmen in connection with their requests for an increase of pay for approximately 65,000 express workers. The company received these requests in October last, but, after careful consideration, declined them.

The company asserts that its review proves that not only does the expressman's dollar purchase more than it ever has before, but that its figures of labor turn-over indicate that the employees generally are satisfied with their employment; they are not leaving the employ of the company to enter that of other employers and finally, any increase in the company's labor bill, already 70 per cent of its total operating expenses, would imperil the industry. The unions are considering the matter with indications that they will refer it to the Labor Board.

Canadian Railway A. F. of L. May Seek Wage Increase

It is possible that overtures will be made this spring by organized labor to the Canadian railways for a revision of the agreement on wages and working conditions. This was indicated at the biennial convention in Montreal of Division No. 4, Railway Employees' Department, of the American Federation of Labor. Discussion began at the second day of the convention and R. J. Tallon, president, said:

"Approximately 140 resolutions, dealing with wages and working conditions, particularly the latter, are before the convention from the various unions across the Dominion, and the sentiment of the resolutions is very strong for the opening up of negotiations on the agreement in the early summer."

The convention went on record against the bonus contract system, operating in Montreal and Stratford, under which certain sections of the shop crafts get a bonus for increased output.

Amalgamation of the nine unions in the division into one big union was also discussed and the convention went a step further this year on the project by deciding that a conference should be called to discuss amalgamation.

HEARINGS on the bill introduced by Senator Cummins, at the request of the National Association of Railway and Utilities Commissioners, to provide for the regulation of interstate motor transportation, were begun by the Senate committee on interstate commerce on March 22, with John E. Benton, general solicitor of the state commissioners' organization, as the first witness.

A CARLOAD of fresh milk was received at Miami, Fla., recently from Marshfield, Wis., in three days; shipped on Wednesday, arrived on Saturday. The milk, in the glass lined tank of one of the refrigerator cars of the General American Car Company, arrived in perfect condition. It was cooled to 35 degrees at the point of shipment and the temperature was only one degree higher on arrival in Florida, after its journey of 1,800 miles. According to the Chicago Tribune, from which we take this item, cows do not thrive in Florida.

Equipment and Supplies

Locomotives

THE GREAT NORTHERN is inquiring for one oil-electric locomotive.

THE UNION RAILROAD is inquiring for 10 six-wheel switching locomotives.

THE BOSTON & MAINE is inquiring for from one to five Diesel electric locomotives.

THE KENTUCKY & INDIANA TERMINAL is inquiring for three six-wheel and eight eight-wheel locomotives.

THE DETROIT & TOLEDO SHORE LINE is inquiring for 3 switching locomotives and 3 Mikado type locomotives.

THE GEORGIA, FLORIDA & ALABAMA has ordered two Mikado type locomotives from the Baldwin Locomotive Works.

THE ALTON & SOUTHERN has ordered one Mikado type locomotive from the American Locomotive Company. This locomotive will have 25 by 30 in. cylinders and a total weight in working order of 275,000 lb.

THE PENNSYLVANIA has given an order for 175, M-1 Mountain type locomotives to the Baldwin Locomotive Works, and has also ordered 25 locomotives of the same type from the Lima Locomotive Works. In the *Railway Age* of March 6, this company was reported as inquiring for 100 locomotives.

Freight Cars

THE CENTRAL VERMONT is inquiring for 200 single sheathed box cars of 40 tons' capacity.

THE YOUNGSTOWN SHEET & TUBE COMPANY is inquiring for 20 gondola cars of 70 tons' capacity.

THE CORDOBA CENTRAL (Argentine) is inquiring through the car builders for 250 steel box cars of 40 tons' capacity.

THE KENDALL REFINING COMPANY, Bradford, Pa., has ordered four tank cars of 10,000-gal. capacity from the Standard Tank Car Company.

SPENCER, KELLOGG & SONS, INC., Buffalo, N. Y., has ordered five tank cars of 6,000 gal. capacity from the American Car & Foundry Company.

THE STANDARD STEEL CAR COMPANY, Pittsburgh, Pa., has ordered three tank cars of 10,000-gal. capacity from the Standard Tank Car Company.

THE HENRY BOWER CHEMICAL COMPANY, Philadelphia, Pa., has ordered one tank car of 10,000-gal. capacity from the Standard Tank Car Company.

THE AMERICAN TAR PRODUCTS COMPANY, Pittsburgh, Pa., has ordered 50 tank cars of 8,000-gal. capacity from the Standard Tank Car Company.

THE GLEN NINA TANK LINE, Buffalo, N. Y., has ordered three triple compartment tank cars of 6,000-gal. capacity from the Standard Tank Car Company.

THE DAMASCUS MANUFACTURING COMPANY, Cleveland, Ohio, has ordered one triple compartment tank car of 6,000-gal. capacity from the Standard Tank Car Company.

THE ANGLO-MEXICAN PETROLEUM COMPANY is inquiring for 5 tank cars of 10,000 gal. capacity and 5 tank cars of 8,000 gal. capacity. These cars are all to have three compartments.

THE COMMERCIAL SOLVENTS CORPORATION, Terre Haute, Ind., has ordered 15 tank cars of 8,000-gal. capacity from the Standard Tank Car Company, and 20 tank cars from another company.

THE ALUMINUM COMPANY OF AMERICA has ordered 30, 20-yd. lift door type air dump cars from the Koppel Industrial Car & Equipment Company, a subsidiary of the Pressed Steel Car Company.

THE ANGLO CHILEAN CONSOLIDATION NITRATE CORPORATION has ordered 62 heavy duty nitrate cars from the Koppel Industrial Car & Equipment Company, a subsidiary of the Pressed Steel Car Company. This company was reported in the *Railway Age* of March 27 as inquiring for 120 cars.

THE NORTHERN PACIFIC has divided an order for 1,000 automobile cars between the Standard Steel Car Company and the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of February 20.

Passenger Cars

THE PENNSYLVANIA has ordered two combination passenger and baggage gas-electric cars from the J. G. Brill Company.

THE CHICAGO & NORTH WESTERN has ordered two power units for installation in one baggage and passenger car for double end operation from the Railway Motors Corporation.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 5 baggage cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of February 20.

Motor Vehicles

THE DENVER & INTERURBAN TRANSPORTATION COMPANY, a subsidiary of the Colorado & Southern, has ordered four parlor type motor buses, the order being divided as follows: Two from the Yellow Coach & Truck Manufacturing Company and two from the International Harvester Company.

THE SANTA FE TRANSPORTATION COMPANY, a subsidiary of the Atchison, Topeka & Santa Fe, has ordered 17 motor buses from the White Company. Fifteen of the buses are of the 14-16-passenger capacity type, the other two being of the 25-passenger capacity type. The buses will be operated by the Fred Harvey Company and will be used in motor tours service in the southwest.

Machinery and Tools

THE NORFOLK & WESTERN has ordered a 6-in. flue welder from Manning, Maxwell & Moore, Inc.

THE MICHIGAN CENTRAL has ordered a self feed rip saw from Manning, Maxwell & Moore, Inc.

THE ERIE has ordered a 2½-in. National double bolt cutter from Manning, Maxwell & Moore, Inc.

Signaling

THE WABASH has ordered from the Union Switch & Signal Company a mechanical interlocking machine, 29 working levers, for installation at Wolcottville, Ind.

THE ATLANTIC COAST LINE is installing automatic block signals south of Jacksonville, Fla., 31 one-arm and 6 two-arm Style S ground signals being furnished by the Union Switch & Signal Company.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company a complete 59-lever Model 14 electro-pneumatic interlocking for Journal Square, Summit avenue, Jersey City, N. J.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for additions to interlockings at Loveland, Ohio; Bradford, Ohio; Knightstown, Indiana; and Dunreith, Indiana.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company 40 electric lever units for application to existing mechanical interlocking machines at Warsaw, Ind., Van Wert, Ohio, and Forest, Ohio.

Supply Trade News

W. R. Walsh has joined the sales department of the **Ewald Iron Company,** with office in the Railway Exchange building, Chicago.

The Electric Service Supplies Company, Philadelphia, Pa., has removed its Pittsburgh office from the Oliver building to the Bessemer building, Pittsburgh, Pa.

H. B. Gay, sales manager of the **Electric Storage Battery Company,** Philadelphia, Pa., manufacturers of Exide batteries, has been appointed a vice-president. Mr. Gay will continue in charge of sales. He is a graduate of Cornell University and entered the employ of the Electric Storage Battery Company in June, 1901, as manager of the company's Baltimore office. In May, 1903, he was transferred to Cleveland as manager of the Cleveland branch. After serving in that capacity until March, 1920, Mr. Gay was transferred to the factory at Philadelphia, Pa., as acting sales manager for the company and, four months thereafter, he was appointed to that position permanently.

H. B. Gay

The Kalamazoo Railway Supply Company, Kalamazoo, Mich., has opened an office at 50 Church street, New York, in charge of **J. E. Murray** and **H. M. Clawson,** who will conduct its Eastern domestic and export sales.

Louis D. Moore has been appointed railway sales engineer, with headquarters at Chicago, of the **French Battery Company,** Madison, Wis. Mr. Moore was formerly electrical engineer with the Missouri Pacific at St. Louis, Mo.

George W. Hoover, district sales manager of the **Buda Company,** Harvey, Ill., with headquarters at St. Louis, Mo., has been appointed eastern sales manager and export sales manager, with headquarters at 30 Church street, New York.

R. H. Sonnborn has been appointed district manager of the **Youngstown Sheet & Tube Company,** with headquarters at Detroit, Mich. **R. J. Mullaly,** formerly superintendent, has been appointed representative, with headquarters at Detroit.

The Pittsburgh Knife & Forge Company, Coraopolis, Pa., has moved the sales office for its railroad department to the First National Bank building, Pittsburgh, Pa., **T. C. King,** manager of railroad sales, is in charge of its Pittsburgh sales office.

C. C. Fredericks, formerly associated with S. F. Bowser & Co., Inc., Ft. Wayne, Ind., has been elected president and general manager of the **St. Louis Pump & Equipment Company,** St. Louis, Mo. **Sherwood Hinds** has been elected chief engineer and vice-president.

F. O. Farey, chemical engineer of the **Robert W. Hunt Company, Ltd.,** Chicago, has been appointed manager of the Montreal office. No change has been made in the personnel of its offices at Toronto and Vancouver, or in the conduct of their inspection and testing work.

The Foster Bolt & Nut Manufacturing Company, Cleveland, Ohio, will construct an addition to its plant at Cleveland, following the completion of the addition which it is now constructing. This company is also erecting a plant at Chicago, which will be placed in operation by May 1.

Burt Fleeger, treasurer, sales manager and a director of Sivyer Steel Casting Company, Milwaukee, Wis., has resigned to become vice-president of the **Oklahoma Steel Castings Company,** Tulsa, Okla. This company is preparing plans for an extensive addition and is purchasing more equipment to increase its capacity of electric steel castings.

The Hall Laboratories, Inc., has been organized with **Ralph E. Hall,** formerly physical chemist U. S. Bureau of Mines, as director. The Laboratories will act as consultants on the application of recent discoveries to the elimination of scale and corrosion in steam plants. The headquarters of the Laboratories are at 304 Ross street, Pittsburgh, Pa.

Charles E. Koch, who has served for some time in the Reading Iron Company's mills at Reading, Pa., will, in future, call on pipe buyers in the Reading territory of the **Reading Iron Company,** confining his efforts to Eastern Pennsylvania in the interests of Reading pipe. His headquarters will be at the general office of the company, Reading.

The Midwest Railway Equipment Company, McCormick building, Chicago, has been organized by **A. P. Sweeney,** formerly assistant to the secretary of the Mechanical Division of the American Railway Association, and **L. J. Brown,** formerly vice-president of the **Illinois Railway Equipment Company,** Chicago, to engage in the sale of railway supplies.

E. C. Wilson, sales director for the **National Safety Appliance Company,** with headquarters at Chicago, has been promoted to eastern manager to succeed K. E. Kellenberger, who has resigned to engage in other business. Mr. Wilson was born at Dunmore, Pa., on October 12, 1890, and graduated from the Lehigh University in the electrical engineering course in 1913. He completed the electrical apprentice course in the shops of the Buffalo, Rochester & Pittsburgh at Du Bois, Pa., and was employed for some time in the electrical department of the Northern Pacific at St. Paul, Minn. After leaving the Northern Pacific Mr. Wilson entered the employ of the Central Electric Company in the railway sales department and a year and a half later resigned to become manager of the Chicago territory of the U. S. Light Corporation and also special representative of the Vapor Car Heating Company. After four years he was appointed western sales manager of the Ohio Locomotive Crane Company and on May 1, 1924, was appointed sales director of the National Safety Appliance Company, with headquarters at Chicago, which position he has held until his recent promotion.

E. C. Wilson

The Pyle National Company, Chicago, following the purchase of the **Oliver Electric & Manufacturing Company,** St. Louis, Mo., has erected an addition to the former plant at Chicago into which the Oliver Company has moved. **J. A. Amos,** vice-president and general manager of the Oliver Electric & Manufacturing Company, has also been elected vice-president of the Pyle National Company.

Day & Zimmermann, Inc., engineers, have opened a foreign office at Paris, France, in charge of **Robert D. McCarter,** vice-president. Mr. McCarter has long been identified with international engineering work, having been associated with the General Electric Company in the United States and in Europe, and for many years served as consulting engineer to the Eu-

ropean Westinghouse Companies, acting also in the capacity of president and managing director of the Societe Electrique Westinghouse de Russie. Since 1902 he has also practised as consulting engineer both in this country and in Europe.

Harlan A. Pratt has been appointed manager of the oil and gas engine department of the **Ingersoll-Rand Company,** New York. Mr. Pratt formerly served in the sales department of the Westinghouse Electric & Manufacturing Company, later becoming sales manager of the Atlantic Elevator Company, agents in the east for Westinghouse Gearless Traction Elevators. For the past three years he has been sales manager of the Elevator Supplies Company, Hoboken, N. J.

The Chicago Pneumatic Tool Company, New York, has acquired the **George Oldham & Sons Company** of Baltimore, Md. The manufacture of the Oldham products will be continued and will be conducted at the Detroit plant, 6201 Second boulevard. The sales will be combined and handled from the Chicago Pneumatic Tool Company's branches now operating in the principal cities as well as through its domestic and foreign agency connections. The Oldham products requiring repairs should be sent to the nearest branch or forwarded to Detroit.

The Universal Generator Company, Blossburg, Pa., manufacturer of portable carbide flood lights and accessories, has made the following sales connections: **E. H. Batchelder, Jr.,** district sales agent for the Chicago district with office at 1038 Transportation building, Chicago; **C. B. Irish,** district sales agent for the St. Louis district, with office at 2091 Railway Exchange building, St. Louis, Mo.; **Joseph F. Leonard,** district sales agent for the southeastern district, with office at 1237 Mutual building, Richmond, Va.; **Pittsburgh Supply Company,** 435 Water street, Pittsburgh, Pa., representative in the Pittsburgh district, and **E. L. Ruby,** 1338 Real Estate Trust building, Philadelphia, Pa., general sales representative for the company.

Independent Pneumatic Tool Company

The annual report of the Independent Pneumatic Tool Company, Chicago, shows net earnings of $818,389 or $4.54 a share on the capital stock, as compared with $720,255 or $4.01 in 1924. Gross profits amounted to $1,566,011 in 1925, as compared with $2,402,638 in 1924. The net working capital amounted to $2,430,439 in 1925 and $2,396,582 in 1924. The current assets in 1925 were $2,821,738 as compared with $2,859,525 in 1924, while the current liabilities in 1925 were $391,299 and $462,943 in 1924. The income account as of December 31, 1925, follows:

	1925	1924
Gross profits	$1,566,011	$2,402,638
Sales, administrative and general expenses	622,708	994,187
Net profit	$943,303	$1,408,451
Miscellaneous charges	51,064	.....
Net income	$892,239	$1,408,451
Other income	43,270	3,390
Total income	$935,509	$1,411,841
Federal taxes	117,120	89,613
Other deductions	.....	601,973
Net earnings	$818,389	$720,255
Per share earnings	$4.54	$4.01

Interstate Iron & Steel Company

The annual report of the Interstate Iron & Steel Company, Chicago, for the year ending December 31, 1925, shows a net profit for the year of $1,108,104. The reserve for plant and roll depreciation amounted to $483,521, the reserve for state and municipal taxes $92,818, interest on bonds and notes paid and accrued $287,479, the discount and expense on the bond issue written off during the year $26,881, and the reserve for federal taxes $170,000. Earnings after deducting all expenses and reserves except depreciation, taxes and interest amounted to $2,168,805. Assets and liabilities amounted to $14,962,456. Land, buildings, plant, machinery, furniture and fixtures amounted to $10,425,591, and current assets $4,240,712, while deferred charges amounted to $296,152. Capital liabilities amounted to $1,880,200, common stock authorized and issued $4,000,000, first mortgage sinking fund gold bonds $3,353,400, current liabilities $1,360,640, reserves $359,793, and surplus $4,008,422.

During 1925 $362,600 of the company's 8 per cent first mortgage bonds were retired under sinking fund provisions and $21,000 of the company's 6 per cent bonds on hand unsold were canceled in accordance with sinking fund requirements. Dividend payments were made regularly on the preferred stock and 3¼ per cent was paid during the year on dividends accrued prior to September 1, 1924.

In 1925 the tonnage produced and shipped exceeded all prior records. The sales price per ton for the company's products was less than in any year since 1913.

Chicago Pneumatic Tool Company

The annual report of the Chicago Pneumatic Tool Company for 1925 shows a net profit of $716,494 as compared with $630,248 in 1924.

H. A. Jackson, president, says in his remarks to stockholders:

> Your company did a volume of business for the year that compares favorably with the best years since war activity. But the profits for 1925 were not entirely satisfactory, due to the nature of the volume. There was a falling off in the more profitable products and an increase in those products which do not provide so satisfactory a margin, all of which detracts from the profits. In addition the company spent for experimental and development work a sum greater than has been spent during any other year in its history, practically all of which expenditure was charged off. Besides this development expense the company acquired during the past year the American manufacturing and selling rights of the German Diesel engine made by the M-W-M Benz of Mannheim. This machine will be manufactured and sold in conjunction with the well known semi-Diesel type made by the company for many years.

The income statement follows:

	1925	1924
Net profits after providing for depreciation and for federal taxes	$722,905.55	$618,330.18
Add: miscellaneous income	58,525.65	102,672.69
	781,431.20	721,002.87
Deduct: interest on borrowed money	64,937.40	90,754.51
Net profit transferred to surplus	$716,493.80	$630,248.36

February Locomotive Shipments

The Department of Commerce announces that February shipments of railroad locomotives, from the principal manufacturing plants, based on reports received from the individual establishments, totaled 163 locomotives, as compared with 121 in January and 88 in February, 1925. The following table, which gives the shipments and unfilled orders of locomotives for each month since January, 1925, presents for the first time separate data for steam and electric locomotives and is a revision of the statistics previously reported.

LOCOMOTIVES

	Shipments					Unfilled orders, end of month				
		Domestic		Foreign			Domestic		Foreign	
Year and month	Total	Steam	Electric	Steam	Electric	Total	Steam	Electric	Steam	Electric
1925										
January	98	41	12	43	2	414	322	44	33	15
February	88	69	7	9	3	414	318	51	33	12
March	117	88	13	14	2	461	324	51	71	15
April	101	78	14	9	0	490	343	41	77	29
May	101	65	9	25	2	478	324	48	75	31
June	114	58	8	42	6	411	274	47	65	25
July	76	56	12	4	4	386	259	39	65	23
August	118	91	6	13	8	334	199	48	72	15
September	100	42	16	34	8	390	278	41	64	7
October	93	47	21	24	1	530	386	40	92	12
November	106	52	8	46	0	585	435	46	64	40
December	104	68	18	14	4	708	557	54	56	41
Total	1,216	755	144	277	40	..	..	..	..	..
1926										
January	121	96	11	14	0	653	506	53	52	42
February	163	101	22	38	2	572	442	60	30	40

Obituary

H. Benson Wiese, secretary of the Parkesburg Iron Company, Parkesburg, Pa., died of heart trouble at his home in Parkesburg on March 29, after an illness of nine months. Mr. Wiese was born in Bordentown, N. J. Before taking charge of the knobbling fires and bar mills of the Parkesburg Iron Company, in January, 1900, Mr. Wiese was assistant supervisor of the Pennsylvania Railroad at Parkesburg. For many years he had been secretary of the Parkesburg Iron Company and in charge of purchases.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—A manufacturing district centering at Hermosa Beach, Cal., will be established this year.

ATCHISON, TOPEKA & SANTA FE.—A water supply system is to be installed at Winslow, Ariz., at a cost estimated at $100,000. The work includes the digging of ditches and laying of pipe lines with a total length of 30,000 ft., for which a contract has been awarded to R. F. Ware, Los Angeles, Cal.

BALTIMORE & OHIO.—A contract has been awarded to the Empire Construction Company, Cumberland, Md., for the reconstruction of three bridges on this company's W. P. & B. branch; approximate expenditure, $60,000. A contract has been awarded to the Vang Construction Company, Cumberland, Md., for the reconstruction of two bridges on the C. L. & W. branch ($30,000) and one in Canton, Ohio ($14,000).

BOSTON & MAINE.—A contract for the installation of fire protection in this company's shops, at East Fitchburg, Mass., to cost approximately $42,000, has been awarded to the Jennison Company, Fitchburg, Mass.

CHICAGO, BURLINGTON & QUINCY.—The construction of an extension to the reclamation plant at Eola, Ill., to have dimensions of 80 ft. by 100 ft., has been authorized.

CHICAGO, ROCK ISLAND & PACIFIC.—Location surveys are being made in contemplation of the construction of the line from Trenton, Mo., on the Rock Island main line, to Braymer, 33 mi., where connection will be made with the Chicago, Milwaukee & St. Paul. The Rock Island plans to arrange for joint track facilities over the St. Paul from Braymer to Kansas City.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Plans are reported being prepared for the construction of an engine terminal at Riverside Yard, Cincinnati, Ohio, to cost approximately $3,000,000. Plans are said to include the construction of a roundhouse and shops and of new tracks and other facilities.

COLUMBIA & COWLITZ.—A contract has been awarded to the Hart Construction Company, Kelso, Wash., for the erection of steel work for a bridge crossing the Cowlitz river north of Kelso, Wash.

COWLITZ, CHEHALIS & CASCADE.—Contracts for the construction of completed roadbed ready for track laying on part of the 14-mile extension from Lacamas, Ore., southeasterly into Lewis county, estimated to cost $386,000, have been awarded as follows: Hendricks & Olson, five miles; Graham Bros. & Medley, three miles. A contract will be awarded about June 1 for the construction of a bridge crossing the Cowlitz river. The bridge will be approximately 250 ft. in length, and is designed to comprise three through girder spans on concrete piers.

DELAWARE, LACKAWANNA & WESTERN.—A contract has been awarded to Roberts & Schaefer Company, Chicago, for the construction of a 1,000-ton reinforced concrete automatic electric locomotive coaling station with duplicate hoisting equipment, and a 1,000-ton reinforced concrete gravity sanding plant with sand driers at East Buffalo, N. Y., to cost approximately $125,000. This work was reported as authorized in the *Railway Age* of March 20.

DETROIT CONNECTING.—The Interstate Commerce Commission has denied the application of this company for authority to construct an 86.7-mile line from Delray (Detroit), Mich., to Marine City. The company will now apply for authority to construct a line from Delray to Pontiac.

DETROIT GRAND BELT.—The Interstate Commerce Commission has denied the application of this company for authority to construct a 47-mile line from Wyandotte, Mich., to Mt. Clemens.

GULF, COLORADO & SANTA FE.—A contract has been awarded to Anderson Bros., El Paso, Tex., for the construction of shop buildings at Cleburne, Tex., to cost $205,000.

Railway Financial News

ABERDEEN & ROCKFISH.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes to be $510,000 as of 1917.

ATLANTA, BIRMINGHAM & ATLANTIC.—*Atlantic Coast Line Offer Accepted.*—Holders of certificates of deposit for Atlanta, Birmingham & Atlantic income bonds have consented unanimously to accept the offer of the Atlantic Coast Line, whereby they will receive in lieu of the bonds $60 in 5 per cent preferred stock, guaranteed by the Coast Line, for each $100 face value of the bonds. Holders of the income bonds not heretofore deposited have until April 28 to join in the plan. Of the $4,543,906 income bonds outstanding more than 70 per cent have agreed to the plan up to the present time.

BANGOR & AROOSTOOK.—1925 *Earnings.*—The annual report for 1925 shows net income after interest and other charges of $723,628 equivalent after allowances for preferred dividends to $6.21 a share on the $50 par value common stock. This compared with $722,750 in 1924 or $6.20 a share. Selected items from the income statement follow:

	1925	1924
Rail operations, revenues	$6,862,488	$6,924,115
Less rail operations, expenses	4,913,867	5,099,039
	$1,948,621	$1,825,076
Other income	398,626	500,516
Gross income	$2,347,247	$2,325,592
Railway tax accruals	569,798	518,587
Interest on funded debt and other deductions	1,053,820	1,084,255
Total deductions	$1,623,619	$1,602,482
Net income	723,628	722,750
Dividends declared from surplus:		
Preferred stock	243,600	243,600
Common stock	231,600	221,950
Total dividends	$475,200	$465,550

BARNEGAT.—*Final Value.*—The Interstate Commerce Commission has fixed the final value for rate-making purposes as of 1916 at $86,282.

BONLEE & WESTERN.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes to be $73,004 as of 1916.

CADDO & CHOCTAW.—*Final Value.*—The Interstate Commerce Commission has fixed the final value for rate-making purposes as of 1916 at $237,499.

CENTRAL CALIFORNIA TRACTION COMPANY.—*Acquisition.*—The Interstate Commerce Commission has made public a proposed report by Examiner Ralph R. Molster recommending a finding by the commission that acquisition of control of this company by the Southern Pacific or the Atchisoh, Topeka & Santa Fe, both of which have asked for such authority, would not be in the public interest. He also recommends a finding that the Western Pacific should not be authorized to contstruct a line from Villinger, Calif., for a distance of 11.4 miles in San Joaquin county, Calif., which it had applied for on condition the traction company should be acquired by another carrier, and that the proceeding be held open to afford opportunity for the formulation of a plan for the acquisition of joint control of the traction company by the Santa Fe, Southern Pacific and Western Pacific.

CHESAPEAKE & OHIO.—*Application to Draw Down Bonds Denied.*—The Interstate Commerce Commission has denied this company's application for authority to nominally issue $10,621,000 of first lien and improvement 20-year 5 per cent mortgage bonds, to reimburse the treasury for expenditures, expressing the opinion that if the expenditures are to be capitalized it should be by an issue and sale of stock rather than bonds.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—1925 *Earnings.*—Annual report for 1925 shows net income after charges of $1,627,050 as compared with $1,400,746 in 1924. Selected items from the income statement follow:

(*Continued on page* 991)

Annual Report

Norfolk and Western Railway Company Thirtieth Annual Report

ROANOKE, VA., March 23rd, 1926.

To the Stockholders of the Norfolk and Western Railway Company:

Your Board of Directors submits the following report for the year ending December 31st, 1925.

Mileage of Road and Track in Operation

	Dec. 31, 1925 Miles	Dec. 31, 1924 Miles	Increase Miles
Main Line	1,542.69	1,542.69	
Branches { Operated as second track	127.28	127.28	
Branches { Other branches	533.64	533.57	
	660.92	660.85	.07
Total miles	2,203.61	2,203.54	.07
Lines operated under lease	22.27	21.03	1.24
Lines operated under trackage rights	15.60	15.60	
Total miles of road in operation	2,241.48	2,240.17	1.31
Second track	617.11	576.68	40.43
Third track	13.58	13.58	
Sidings and yard tracks	1,557.16	1,535.74	21.42
Total miles of all tracks in operation	4,429.33	4,366.17	63.16
Average miles of road operated	2,240.96	2,240.69	.27
Average miles of track operated	4,400.77	4,343.22	57.55

Income Statement

OPERATING INCOME:	1925	1924
Operating Revenues:		
Freight	$93,370,356.89	$81,684,817.95
Passenger	8,031,228.95	8,972,056.97
Mail	1,149,651.55	1,161,923.09
Express	1,101,736.16	1,118,992.21
All Other Transportation	562,353.83	581,049.65
Incidental and Joint Facility Revenues	1,003,663.61	1,061,834.37
Totals	$105,218,990.99	$94,580,674.24
*Revenue from Interline Business for December:		
Freight	.....	$3,108,666.76
Passenger	.....	17,969.15
Totals	$105,218,990.99	$97,707,310.15
Operating Expenses:		
Maintenance of Way and Structure	$15,109,848.31	$14,801,043.80
Maintenance of Equipment	21,655,956.19	22,796,839.42
Traffic	1,190,439.35	1,054,805.39
Transportation	28,140,127.68	29,217,013.26
Miscellaneous Operations	272,971.10	288,092.22
General	2,084,549.95	2,012,582.29
Transportation for Investment—Credit	519,077.09	295,267.82
Totals	$67,934,815.49	$69,875,108.56
Ratio of Expenses to Total Operating Revenues	64.57%	73.88%
Net Revenue from Operations	$37,284,175.50	$27,832,201.59
Tax Accruals	$8,600,000.00	$7,400,000.00
Uncollectible Revenue	29,022.31	13,539.37
Total Operating Income	$28,655,153.19	$20,418,662.22
NON-OPERATING INCOME:		
Hire of Freight Cars—Net	$2,386,617.48	$1,726,291.46
Hire of Other Equipment—Net	167,130.10	17,628.58
Joint Facility Rents—Net	302,051.62	300,787.18
Totals	$2,855,799.20	$2,044,707.22
NET RAILWAY OPERATING INCOME	$31,510,952.39	$22,463,369.44
OTHER NON-OPERATING INCOME:		
Income from Lease of Road	$1,110.00	$1,110.00
Miscellaneous Rent Income	75,873.05	79,282.97
Miscellaneous Non-Operating Physical Property	81,445.71	147,276.53
Dividend Income	7,048.66	6,598.66
Income from Funded Securities	488,545.33	622,931.17
Income from Unfunded Securities and Accounts	219,459.39	219,494.59
Miscellaneous Income	6,648.83	6,529.68
Totals	$880,130.97	$1,083,223.60
GROSS INCOME	$32,391,083.36	$23,546,593.04
DEDUCTIONS FROM GROSS INCOME:		
Rent from Leased Roads	$105,388.57	$103,805.48
Miscellaneous Rents	1,846.72	1,754.70
Interest on Funded Debt:		
Mortgage Bonds	3,856,240.00	3,605,370.67
Convertible Bonds	263,029.23	495,305.00
Equipment Obligations	1,247,587.51	963,346.38
Interest on Unfunded Debt	74,618.18	20,729.46
Amortization of Discount on Funded Debt	247,043.02	80,751.28
Miscellaneous Income Charges	30,571.46	32,182.03
Totals	$5,826,324.69	$5,303,245.00
NET INCOME	$26,564,758.67	$18,243,348.04
Dividends on Adjustment Preferred Stock	919,692.00	919,692.00
INCOME BALANCE: Transferred to Profit and Loss	$25,645,066.67	$17,323,656.04

*NOTE:—It has been the Company's practice for many years to include in its figures of Operating Revenues for each month the revenue from local business for that month and the revenue from interline forwarded and received business for the preceding month. By order of the Interstate Commerce Commission, it became necessary, beginning with December, 1924, to include the revenue from interline business in the figures for the month in which it was earned. December, 1924, figures, therefore, include the revenue from interline business for November and December, and the figures for the year 1924 include similar revenue for the thirteen months December, 1923, to December, 1924, inclusive.

Profit and Loss Statement

	1925	1924
CREDITS:		
Balance, January 1st	$47,361,538.06	$44,448,882.45
Credit Balance from Income	25,645,066.67	17,323,656.04
Unrefundable Overcharges	57,065.38	24.61
Repayment by Pocahontas Coal & Coke Company:		
Advances for Mortgage Bond Interest	370,000.00	234,000.00
Profit on Road and Equipment sold	4,920.97	6,958.69
Donations for Construction of Sidings	532,266.72	56,436.59
Miscellaneous Credits	32,118.53	33,831.69
Totals	$74,002,976.33	$62,103,740.85
CHARGES:		
Dividend Appropriations of Surplus, Common Stock	$10,930,694.00	$10,608,539.00
Surplus Appropriated for Investment in Physical Property	532,266.72	56,436.59
Loss on Retired Road and Equipment	71,471.60	300,197.20
Adjustment on Account of Final Settlement with U. S. Government for the Guaranty Period—March to August, 1920, inclusive	.....	3,728,210.39
Surplus applied to Norfolk & Western Pension Reserve Fund	1,700,000.00	.....
Miscellaneous Debits	41,259.42	48,819.61
Totals	$13,275,691.74	$14,742,202.79
Balance, December 31st	$60,727,284.59	$47,361,538.06

Capital Stock

The aggregate amounts of Adjustment Preferred and Common capital stock authorized and issued, including 77 shares ($7,700) of Adjustment Preferred stock and 24 shares ($2,400) of Common stock held in the Company's treasury, were as follows:

	Authorized	Issued Par Value	Issued Shares
Adjustment Preferred Stock	$23,000,000	$23,000,000	230,000
Common Stock	250,000,000	137,321,700	1,373,217
Totals, December 31st, 1925	$273,000,000	$160,321,700	1,603,217
Totals, December 31st, 1924	273,000,000	157,796,700	1,577,967
Increase (all Common Stock)	.....	$2,525,000	25,250

The additional 25,250 shares of Common Stock were issued in exchange for $2,525,000 Convertible 10 Year 6 per cent Gold Bonds of 1919 surrendered for conversion.

Of the $112,678,300 authorized but unissued Common Stock $3,404,300 was reserved for the conversion at par of a like amount of outstanding Convertible 10 Year 6 per cent Gold Bonds of 1919.

On December 31st, 1925, your Company's stockholders numbered 12,618, a decrease in the year of 344.

Funded Debt

The aggregate Funded Debt actually outstanding was as follows:

	Dec. 31, 1925	Dec. 31, 1924	Increase or Decrease
Mortgage Bonds	$89,288,500	$89,288,500	.....
Convertible Bonds ($436,000 not now convertible)	3,840,300	6,365,300	Dec. $2,525,000
Equipment Trust Obligations	26,380,000	22,975,000	Inc. 3,405,000
	$119,508,800	$118,628,800	Inc. $880,000

The decrease in the amount of Convertible Bonds outstanding was due to the conversion into Common Stock of $2,525,000 of Convertible Bonds as described under the head of "Capital Stock."

Equipment Trust Obligations outstanding were decreased during the year by the payment at maturity of $640,000 Equipment Trust Certificates, Series of 1922, $550,000 Equipment Trust Certificates, Series of 1923, $500,000 Equipment Trust Certificates, Series of 1924, and $530,000 Equipment Trust Certificates, Series of 1925, and the acquisition by your Company of $375,000 Equipment Trust Certificates, of various issues, and were increased by

the sale of $6,000,000 Equipment Trust Certificates, Series of 1925, making a net increase of $3,405,000.

The right of the holders of Convertible 10 Year 6 per cent Gold Bonds of 1919 to convert their bonds into Common Stock will terminate August 31st, 1929.

Road and Equipment

The additions to investment in road and equipment during the year, were $24,359,053.35.

The total investment in road, equipment and miscellaneous physical property on December 31st, 1925, was $389,074,426.15, of which $43,963,335.28 was provided by appropriations from surplus and income as shown by the General Balance Sheet. In addition $12,856,272.67 was provided by direct charges to income prior to July 1st, 1907.

During the year 35.04 miles of double tracking on Big Sandy Line and 5.39 miles of double tracking on Tug Fork Branch were completed.

New equipment received and equipment rebuilt during the year were as follows:

2 locomotives (electric).
1,000 all-steel box cars, 100,000 lbs. capacity.
4,000 all-steel gondola cars, 115,000 lbs. capacity.
1,594 all-steel gondola cars, 115,000 lbs. capacity, rebuilt.
463 all-steel hopper cars, 115,000 lbs. capacity, rebuilt.
244 maintenance of way camp cars (built with used material).
12 maintenance of way flat cars (built with used material.)
1 derrick and tool car (built with used material).
1 spreader car (built with used material).
1 locomotive crane.
5 automobile trucks.

Of this equipment, 244 maintenance of way camp cars, 12 maintenance of way flat cars, 1 derrick and tool car and 1 spreader car were built at your Roanoke Shops.

Additions and Betterments to Way and Structures

201.86 miles of track were laid with 130-lb. rail, making a total of 577.57 miles of track now laid with this weight of rail.

382,673 cubic yards of stone, 142,435 cubic yards of prepared slag and 146,980 cubic yards of gravel were used in standard ballasting on the main line.

Passing sidings were extended as follows: 13,496 feet on the Shenandoah Division, 2,213 feet on the Radford Division and 13,349 feet on the Scioto Division.

Additional tracks were provided at Bond Hill, Ohio, to facilitate the handling of business over the Cincinnati Belt Line, and increased facilities for interchange with the Cleveland, Cincinnati, Chicago and St. Louis Railroad Company at Ivorydale, Ohio, were completed.

A new freight classification yard, with additional shop facilities, etc., is under construction at Williamson, W. Va., and the present yard at Portsmouth, Ohio, is being enlarged, with provision for additional pull-in tracks, shop facilities, icing station, storehouses, office building, coaling station, 115-foot turntable, etc.

A combined passenger and freight station was built at Pamplin, Va., and a freight station at Bluefield, W. Va. Enlarged and improved icing stations, including platforms and equipment, were provided at West Roanoke, Va., and Clare, Ohio. Automobile unloading platforms were constructed at Waverly, Burkeville, St. Paul, Richlands and Cleveland, Va., and Winston-Salem and Durham, N. C.

An oil house, air pump and stoker house were built and a portion of machine shop was rebuilt at East Roanoke, Va. An engineers' wash room, machine shop and storehouse were built at Shenandoah, Va. An electric repair shop was erected and twenty engine pits in the roundhouse were rebuilt at Bluefield, W. Va. An engine inspection pit, ash hoist, engine repair house, storehouse, oil and waste house, Machine shop, office and lavatory were erected at Clift Yard, W. Va. A lavatory and engine and drop pits were constructed at Wilcoe, W. Va. A car supply house, register office and wash rooms were built at Auville Yard, W. Va. A pipe and tin shop, extension to machine shop, crane and runway, and bunk house for laborers were erected at East Portsmouth, Ohio. A commissary building was erected and the storehouse roof was raised at Columbus, Ohio. The Y. M. C. A. building was extended and yard office and register and locker rooms were erected at Clare, Ohio. Standard section foreman's houses were erected at Lurich and Stuarts Draft, Va., Nolan and Vedra, W. Va., and Book, Ohio, and signal maintainer's dwelling was erected at Devon, W. Va. Motor car houses were provided at Hagerstown, Md., Berryville, Riverton, Luray, Elkton, Waynesboro, Vesuvius and Glasgow, Va.

At Lambert Point, Va., a shed 70 feet wide and 900 feet long, over "Open Top" Pier, is nearing completion. A floor was placed over two tracks in the 1200-foot Steamer Warehouse, Pier "L." Improvements at Pier "S," including driveways, ramps, steel runways, sheds for stevedores and dredging of slip on upstream side of pier to a width of 230 feet, were completed.

Water softening plants of 60,000 gallons per hour capacity were installed at Prichard and Stonecoal, W. Va., and one, transferred from Williamson, W. Va., and increased to 26,000 gallons per hour capacity, was installed at Vulcan, W. Va.

Steel water tanks, for treated water, were erected as follows: Two each of 200,000 gallons capacity, at Prichard and Stonecoal, W. Va., and one of 100,000 gallons capacity at Lawshe, Ohio. Service tanks of 50,000 gallons capacity were erected at Front Royal, Lithia and Dry Branch, Va.

Concrete pump wells were constructed and electric pumps installed at Prichard, Stonecoal and Clift Yard, W. Va., and Ingham, Luray and Front Royal, Va. A 12-inch cast iron pipe line 1½ miles in length, for furnishing treated water, was laid between West Roanoke and Roanoke Shops, Va. A 10-inch steel water pipe line, 5 miles in length, between Coaldale and Morgan, W. Va., was replaced by 12-inch cast iron pipe for Elkhorn Water Supply.

A reinforced concrete viaduct 1,847 feet in length, with a branch viaduct 597 feet in length, was completed at Petersburg, Va., eliminating the grade crossing at that point.

Overhead bridges were constructed at Durham, N. C., Boones Mill and Eggleston, Va., and Kermit, W. Va. Standard undergrade crossings were completed at Concord, Va., and Neal, W. Va., and undergrade crossings at Lucasville and Circleville, Ohio, were enlarged and improved.

Thirty-four grade crossings were eliminated during the year, twenty-seven by road changes, five by overhead bridges and two by undergrade crossings.

38.66 miles of right-of-way fencing were erected.

236 lineal feet of light steel bridges were replaced with fit steel doubled.

101 lineal feet of trestle were replaced with fit steel.

325 lineal feet of new second track were added to existing bridges.

229 lineal feet of fit additional track were added to existing bridges.

375 lineal feet of new double track trestle bridges were constructed.

Maintenance Expenditures

The expenses for Maintenance of Way and Structures were as follows:

	1925	1924
Total Expenses	$15,109,848.31	$14,801,043.80
Average per mile of road operated	6,742.58	6,605.57
Average per mile of track operated	3,433.46	3,407.85

The expenses for Maintenance of Equipment were as follows:

	1925	1924
Total Maintenance of Equipment Expenses. In which are included:	$21,655,956.19	$22,796,839.42
Steam Locomotives: Repairs, retirements and depreciation	10,593,959.31	11,415,726.37
Average per locomotive	10,605.60	11,428.07
Average per 1,000 locomotive miles	482.94	530.55
Electric Locomotives (Double-units): Repairs, retirements and depreciation	265,892.29	261,387.48
Average per locomotive	16,618.27	18,670.53
Average per 1,000 locomotive miles	580.05	645.00
Freight Train Cars: Repairs, retirements and depreciation	7,762,941.51	7,877,801.96
Average per freight car	170.89	188.63
Average per 1,000 tons one mile	.57	.65
Passenger Train Cars: Repairs, retirements and depreciation	931,934.87	987,233.54
Average per passenger car	1,894.83	1,997.44
Average per 1,000 passengers one mile	3.96	3.76
Work Equipment: Repairs, retirements and depreciation	231,820.47	355,977.35

There were in the shops undergoing and awaiting classified repairs at the close of the year 75 locomotives, or 7.5 per cent (55 of which needed only light repairs), 13 passenger cars, or 2.6 per cent, and 319 freight and work equipment cars, or 0.7 per cent.

Traffic and Operating Revenue Comparisons

Comparison of traffic and operating revenue figures with those of the preceding year shows the following changes:

Number of passengers	4,538,851	decreased	839,317	15.61 per cent
Average haul of passengers	51.80 miles	increased	3.03 miles	6.21 "
Revenue from passenger fares	$8,031,228.95	decreased	$958,797.17	10.67 "
Average rate per passenger per mile	3.416 cents	decreased	0.011 cents	.32 "
Revenue freight carried	50,266,557 tons	increased	5,840,856 tons	13.15 "
Average haul of freight	272.22 miles	decreased	0.82 miles	.30 "
Revenue from freight transportation	$93,370,356.89	increased	$8,576,872.18	10.11 "
Average rate per ton per mile	0.682 cents	decreased	0.017 cents	2.43 "
Average tons of revenue freight per train mile	1,316.83	increased	118.18 tons	9.86 "
Shipments of Coal	38,129,707 tons	increased	5,540,497 tons	17.00 "
Shipments of Coke	455,175 tons	increased	103,387 tons	29.39 "
Shipments of Ore	570,977 tons	increased	61,942 tons	12.17 "
Shipments of Pig and Bicom Iron	204,783 tons	decreased	21,902 tons	9.66 "
Shipments of Lumber	1,615,412 tons	decreased	87,277 tons	5.13 "

Electrification

The extension of the electrified system from Farm to Iaeger, W. Va., a distance of approximately 22 miles, including the construction of substations at Roderfield and Iaeger, W. Va., and the extension of electrification over Auville Yard, W. Va., was completed and is now in service.

Construction of foundations for overhead catenary structures in connection with extension of electrification from Iaeger to Williamson, W. Va., is progressing and will be completed in the latter part of 1926.

Construction of cross-country high tension transmission lines between Bluestone and Welch, W. Va., for the Iaeger to Williamson electrification, and between Bluestone and Matoaka, W. Va., for interchange of electric current with the Virginian Railway, is also in progress and will be completed during 1926. New substations at Bluestone and Welch, W. Va., including installation of transformers and switching equipment, are practically completed and construction of a tie switching station at Matoaka, W. Va., is under way and will be completed about June, 1926.

Automatic Train Control

Automatic train control between Shenandoah, Va., and Hagerstown, Md., a distance of 107 miles, including automatic signals, wayside train control apparatus and transmission line and engines operating with train control device, was completed and is in operation.

Your Company petitioned the Interstate Commerce Commission for relief from the second train control order requiring installation of automatic train control between Roanoke and Shenandoah, Va., a distance of 132 miles. The petition was denied but time for completion was extended to July 18th, 1926. Installation of automatic signals is well under way and the additional train control apparatus required has been contracted for so that your Company expects to have its entire Shenandoah Division from Roanoke, Va., to Hagerstown, Md., completely equipped and in operation by July, 1926. Automatic train control installation between Roanoke and Shenandoah, Va., will cost approximately $1,381,000.

Operating Results

Operating Revenues in 1925 were $105,218,990.99, the largest in the Company's history, and a gain of $7,511,680.84, or 7.69 per cent over the published figures for 1924. These latter figures, however, included thirteen months' revenue from interline business. Freight Revenues increased $8,576,872.18, or 10.11 per cent, and Passenger, Mail and Express Revenues decreased $988,324.76, or 8.77 per cent. Operating Expenses showed a reduction of $1,940,293.07, or 2.78 per cent, Maintenance of Equipment being less by $1,140,883.23, or 5 per cent, and Transportation Expenses less by $1,076,885.58, or 3.69 per cent, while Maintenance of Way and Structures increased $308,804.51, or 2.09 per cent. The ratio of Operating Expenses to Operating Revenues was 64.57 per cent, the lowest figure this ratio has reached since 1917, while the ratio of Transporation Expenses to Operating Revenues was 26.74 per cent, which is the lowest figure since 1916. In both these ratios the Norfolk and Western figures for 1925 were the lowest attained by any of the leading roads in the United States. Net Operating Revenues were $37,284,175.50, an increase of $9,451,973.91, or 33.96 per cent, over the previous year and the largest in the history of the Company.

Taxes

The charge for taxes was $8,600,000, the largest amount in the history of the Company, and an increase of $1,200,000, or 16.22 per cent, over the year 1924. This increase was due to greater net earnings in 1925, increase in your Company's assessment in the state of Ohio and a higher rate of levy in the states traversed by your System.

The charge for taxes for the year 1925 was 246.77 per cent greater than for the year 1916.

The percentage of Net Revenue from Operations consumed by taxes for the year ending December 31st, 1925, was 23.07 per cent. This compares with a percentage of taxes to Net Revenue from Operations of 9.56 per cent in 1916.

Return Upon Investment

The following table shows the percentage ratio of Net Railway

---

Norfolk and Western Railway Company Conden

ASSETS			Comparison with Dec. 31, 1924
INVESTMENTS:			
Investment in Road and Equipment:			
Road	$269,348,844.37	.....	I. $13,519,550.40
Equipment	115,673,757.05	.....	I. 10,839,502.95
		$385,022,601.42	I. 10,839,502.95
Deposits in lieu of mortgaged property sold	.....	13,685.26	
Miscellaneous Physical Property		4,051,824.73	I. 217,578.74
Investments in Affiliated Companies:			
Stocks	$2,087,321.42	.....	I. 670.00
Bonds	287,220.00	.....	D. 24,213.75
Advances	4,537,885.40	.....	I. 134,540.77
		6,912,426.82	
Other Investments:			
Stocks	$4.696.40		
Bonds	11,677,932.14	.....	I. 2,404,563.92
		11,682,628.54	
Total		$407,683,166.77	
CURRENT ASSETS:			
Cash	$5,541,177.09	.....	I. 922,569.38
Loans and Bills Receivable	146,120.04	.....	D. 21,804.02
Traffic and Car Service Balances Receivable	6,850,646.52	.....	I. 2,413,916.66
Net Balances Receivable from Agents and Conductors	288,676.04	.....	D. 328,770.14
Miscellaneous Accounts Receivable	1,794,301.82	.....	D. 5,945,927.74
Material and Supplies	12,027,042.60	.....	D. 1,208,466.48
Interest and Dividends Receivable	50,707.02	.....	D. 597.32
Other Current Assets	39,324.84	.....	I. 2,611.91
Total		26,737,995.97	
DEFERRED ASSETS:			
Working Fund Advances	$9,144.99	.....	D. 98.52
Trustees for Norfolk and Western Pension Reserve Fund	1,700,087.49	.....	I. 1,700,087.49
Norfolk and Western Railway Company and Pocahontas Coal and Coke Company Joint Purchase Money Mortgage Bonds	14,136,000.00	.....	D. 349,000.00
Securities held in trust for Relief Fund	1,112,000.00	.....	I. 384,000.00
Other Accounts	94,150.00	.....	I. 84,150.00
Total		17,051,382.48	
UNADJUSTED DEBITS:			
Rents and Insurance Premiums paid in Advance	$146,835.01	.....	I. 102,418.22
Discount on Funded Debt	1,652,817.14	.....	D. 201,893.02
Other Unadjusted Debits	605,607.26	.....	I. 109,933.50
Securities Issued or Assumed—Unpledged			
Par value of holdings at close of year $338,100.00			
Total		2,405,259.41	
		$453,877,804.63	I. $24,755,322.95

Operating Income to Railway Property Investment, including in Railway Property Investment the investment in Company Mines producing fuel coal for use of Railway Company, expenditures for Additions and Betterments charged directly to Income or to reserves created from Income before July 1st, 1907 (from which date the accounting classifications of the Interstate Commerce Commission have required all similar expenditures to be charged to Property Investment accounts), and the value of Material and Supplies on hand at the close of each year, no Working Capital, however, being included. The Net Railway Operating Income upon which the percentages are based follows the definition in the Transportation Act and is made up of Net Revenue from Operations deducting Tax Accruals and Uncollectible Revenues and adding Equipment and Joint Facility Rents.

For the years 1918 *to* 1924 *the table includes operating results of or for account of the Federal Government.*

FOR Calendar years ending:	Railway Property Investment	Net Railway Operating Income	Return Upon Investment %
December 31st, 1916	$287,406,380.10	$24,866,782.43	8.65
December 31st, 1917	303,327,414.78	21,928,005.74	7.23
December 31st, 1918	317,950,562.76	16,450,087.35	5.17
December 31st, 1919	326,047,116.71	8,176,537.94	2.51
December 31st, 1920	342,544,618.29	3,612,843.10	1.05
December 31st, 1921	348,091,045.54	14,870,020.43	4.27
December 31st, 1922	357,551,199.45	18,624,467.57	5.21
December 31st, 1923	367,088,393.95	19,877,676.85	5.41
December 31st, 1924	391,578,806.65	22,468,428.65	5.74
December 31st, 1925	415,087,487.28	31,510,952.39	7.59

The figures shown above for Railway Property Investment do not measure present value. The greatly enhanced costs of construction at the present time would have to be considered to determine this. Nor does the Investment Account disclose intangible elements such as the going concern value which should be added to determine value.

Insurance Reserve

The following table shows the results of the operation of the Company's Insurance Reserve since its inauguration on March 1st, 1920.

	Credits	Debits: Re-Ins. Premiums	Debits: Fire Losses	Debits: Total	Net Credits
10 Months ending December 31st, 1920	$60,094.91	$19,286.70	$30,217.16	$49,503.86	$10,591.05
Year ending December 31st, 1921	59,695.71	1,263.81	19,034.43	20,298.24	39,397.47
Year ending December 31st, 1922	55,859.28	1,310.90	20,480.47	21,791.37	34,067.91
Year ending December 31st, 1923	50,968.61	1,049.89	29,552.19	30,602.08	20,366.53
Year ending December 31st, 1924	44,901.97	892.41	18,463.98	19,356.39	25,545.58
Year ending December 31st, 1925	34,831.77	3,023.23	18,216.25	21,239.48	13,592.29
Net Credit December 31st, 1925					$143,560.83

Your Company assumes the entire fire risk on all insurable items under $1,000, 50 per cent of the risk on insurable items of limited exposure in excess of $1,000, and 10 per cent on items in excess of $1,000 where, because of special conditions, the risk is greater. It also assumes 50 per cent of the fire risk on all rolling stock and on merchandise in transit.

Federal Valuation

The cost to your Company from June 30th, 1916, to December 31st, 1925, on account of the valuation of its property, has been $930,328.90.

Your Company filed a protest against the Tentative Valuation of the property fixed by the Interstate Commerce Commission as of June 30th, 1916, at $237,392,000. Hearings upon the protest have been concluded and on November 28th, 1925, the case was submitted to the Commission for Final Valuation. A decision is expected in 1926.

The Final Valuation will be as of the date June 30th, 1916, and will have to be brought down to date by the Commission before it can be currently used as a basis for recapture or for any other purpose under the Act to Regulate Commerce.

Relief and Pension Department

At the end of the year the Relief Fund had 21,480 members,

---

sed General Balance Sheet, December 31st, 1925

LIABILITIES				Comparison with Dec. 31, 1924
CAPITAL STOCK:				
Adjustment Preferred	$23,000,000.00			
Held in Treasury	7,700.00			
		$22,992,300.00		
Common	$137,321,700.00			
Held in Treasury	2,400.00			
		137,319,300.00		
Total			$160,311,600.00	I. $2,525,000.00
LONG TERM DEBT:				
Mortgage Bonds	$89,301,500.00			
Held in Treasury	13,000.00			
		$89,288,500.00		
Convertible Bonds	$3,845,300.00			
Held in Treasury	5,000.00			
		3,840,300.00	.....	D. 2,525,000.00
Equipment Obligations	$26,690,000.00			
Held in Treasury	310,000.00			
		26,380,000.00		I. 3,405,000.00
Total			119,508,800.00	
CURRENT LIABILITIES:				
Traffic and Car Service Balances Payable		$702,657.30	.....	I. 522,378.12
Audited Accounts and Wages Payable		4,361,261.28	.....	I. 318,400.61
Miscellaneous Accounts Payable		519,050.70	.....	D. 116,157.03
Interest Matured Unpaid		58,018.00	.....	D. 1,679.00
Dividends Matured Unpaid		10,547.75	.....	I. 5,014.50
Funded Debt Matured, Unpaid		6,000.00		
Unmatured Dividends Declared		229,923.00		
Unmatured Interest Accrued		1,592,445.00	.....	D. 84,031.00
Total			7,479,903.03	
DEFERRED LIABILITIES:				
Trustees for Norfolk and Western Pension Reserve Fund		$1,700,087.49	.....	I. 1,700,087.49
Securities held in Trust for Relief Fund		1,112,000.00	.....	I. 384,000.00
Other Accounts		175,034.53	.....	D. 28,481.21
Total			2,987,122.02	
JOINT LIABILITIES:				
Norfolk and Western Railway Company and Pocahontas Coal and Coke Company Joint Purchase Money Mortgage Bonds			14,136,000.00	D. 349,000.00
UNADJUSTED CREDITS:				
Tax Liability		$5,725,632.83	.....	I. 1,582,337.48
Insurance and Casualty Reserves		143,560.83	.....	D. 650,597.01
Operating Reserves		1,077,159.43	.....	I. 1,077,159.43
Accrued Depreciation—Road		11,639,367.68	.....	I. 890,061.45
Accrued Depreciation—Equipment		24,874,347.99	.....	I. 2,153,801.20
Accrued Depreciation—Miscellaneous Physical Property		609,281.04	.....	I. 114,009.43
Other Unadjusted Credits		694,409.91	.....	D. 64,994.76
Total			44,763,759.71	
CORPORATE SURPLUS:				
Additions to Property through Income and Surplus:				
Road	$20,658,309.01		.....	I. 532,266.72
Equipment	23,305,026.27			
		$43,963,335.28		
Profit and Loss Balance		60,727,284.59	.....	I. 13,365,746.53
Total			104,690,619.87	
			$453,877,804.63	I. $24,755,322.95

equivalent to 69.15 per cent of the total number of employees, an increase in the year in number of members of 923 and a decrease of 1.97 in percentage of members to employees. The members of the Fund contributed during the year $752,097.65 and the Fund received additional income of $36,130.51 from interest and from profit on securities matured. Against these total receipts of $788,228.16, death benefits aggregating $176,625.00 and sickness and accident benefit aggregating $348,838.25 were paid, and $262,764.91 was added to the Fund's credit balance. In the same period the Company paid the operating expenses of the Fund amounting to $123,487.99.

Pension Reserve Fund

Your Company established its Relief and Pension Department on July 1st, 1917, since which time there have been retired with pensions 789 officers and employees and the sum of $1,421,140.81 has been paid in pensions. At the close of 1925 there were 556 employees on the pension roll with average pension of $521.64 per annum.

Your Directors have realized that in granting pensions the Company was creating a liability which could not be measured simply by the amount paid out during the year. It was also evident that, with the rising scale of wages in recent years, greater permanency of employment and a steadily increasing number of pensioners, this liability was likely to grow from year to year and might reach a point where it would become a serious burden. To meet this situation and to safeguard pensions already granted your Directors have appropriated from Surplus the sum of $1,700,000 which, invested, is estimated to be sufficient to take care of the pensions of all employees on the pension roll at the close of the year 1925. This sum has been placed in the hands of three Trustees, A. C. Needles, David W. Flickwir and E. H. Alden, all of whom are members of your Board of Directors, under a Deed and Declaration of Trust, dated December 15th, 1925, with power to invest and reinvest and to pay therefrom pensions authorized by the Board of Directors and certified to them by the Comptroller.

It is intended to make similar provision for employees currently retired by monthly charges to Operating Expenses of an amount sufficient, when invested, to pay out to the end your Company's expectable liability.

Pocahontas Coal and Coke Company

Earnings of the Pocahontas Coal and Coke Company for the year 1925 were the largest in the Company's history, royalties on total output of coal mined and coke manufactured amounting to $1,546,451.10 and other income to $84,566.04, making total earnings of $1,631,017.14 compared with $1,410,581.45 in 1924. Operating expenses were $158,357.06 and taxes $185,837.65, leaving net earnings of $1,286,822.43. Sinking fund and interest on funded debt, with other deductions, resulted in net income of $374,753.64, an increase of $97,583.60 over the preceding year. The output of coal from the Company's leased property in 1925 was 14,808,596 tons and of coke 64,680 tons. The Pocahontas Coal and Coke Company, all of whose capital stock is owned by the Norfolk and Western Railway Company, is a land-owning company, and neither mines nor sells coal itself. Of its holdings of approximately 300,000 acres of land in Virginia and West Virginia about 180,000 acres are under lease to operating companies. Its income is wholly derived from royalties paid by these operating companies and from sales of timber.

Under the sinking fund provision of the Pocahontas Coal and Coke Company Purchase Money First Mortgage, dated December 2nd, 1901, $372,802.10 accrued from royalties on coal mined during the calendar year 1925. From the beginning of the operation of the sinking fund in 1906 to December 31st, 1925, the accruals from royalties have aggregated $5,356,191.55 and those from sales of lands $199,809.00, a total of $5,556,000.55 applicable to the purchase and retirement of mortgage bonds. Through this fund $5,864,000 of bonds had been purchased and canceled to December 31st, 1925. Additional bonds amounting to $403,000 were purchased and canceled in February, 1926, reducing outstanding bonds to $13,733,000.

A further payment of $555,000 has been made on account of indebtedness incurred in previous years to meet fixed charges; this indebtedness has now been reduced to $1,389,000.

Proposed Lease of the Virginian Railway Company

The Virginian Railway Company is a Virginia corporation

Additions to Investment in Road and Equipment

Road and General Expenditures	How Payable: From Appropriated Surplus	How Payable: From Capital Obligations	Totals
Branches and Extensions			
Lenore Branch, W. Va.	.....	$1,562.02	$1,562.02
Kermit—Warfield Tracks and Bridge	.....	100,856.48	100,856.48
Total	.....	$102,418.50	$102,418.50
Right of Way and Station Grounds	.....	534,668.99	534,668.99
Protection of Banks and Drainage	.....	39,442.18	39,442.18
Tunnel Improvements	.....	665.54	665.54
Bridges, Trestles and Culverts	.....	175,917.47	175,917.47
Rails and Fastenings	.....	1,608,522.57	1,608,522.57
Improved Ballast	.....	410,969.19	410,969.19
Additional Main Tracks	.....	4,317,616.40	4,317,616.40
Sidings and Spur Tracks	$532,266.72	114,126.11	646,392.83
Terminal Yards	.....	909,725.85	909,725.85
Fencing Right-of-Way	.....	8,117.01	8,117.01
Elimination of Grade Crossings	.....	189,971.09	189,971.09
Block and Other Signal Apparatus	.....	12,217.18	12,217.18
Stations, Office Building and Fixtures	.....	577,117.12	577,117.12
Shops, Engine Houses and Turntables	.....	912,802.49	912,802.49
Shop Machinery and Tools	.....	746,153.59	746,153.59
Water and Fuel Stations	.....	197,197.95	197,197.95
Dock and Wharf Property	.....	320,080.05	320,080.05
Electric Power Transmission	.....	809,640.49	809,640.49
Roadway Buildings	.....	38,190.72	38,190.72
Roadway Machines	.....	20,998.41	20,998.41
Tie Treating Plant	.....	128,940.64	128,940.64
Flood Defense	.....	275.39	275.39
Automatic Signals and Train Control	.....	904,659.54	904,659.54
Other Additions and Betterments	.....	181,515.29	181,515.29
Total—Road	$13,503,936.74		
Total—General Expenditures	15,613.66	$532,266.72	$12,987,283.68	$13,519,550.40
EQUIPMENT:			
Expenditures for New Equipment under contracts completed within the year or under construction at end of the year		$3,146,129.43	
Equipment under Equipment Trust "1925"		7,601,455.36	
Cost of rebuilding Freight Equipment		2,542,838.50	
Cost of change in classification of Equipment		374.20	
Application of improved parts—Locomotives		244,831.85	
Application of improved parts—Freight Train Cars		251,431.45	
Application of improved parts—Passenger Train Cars		1,227.94	
Application of improved parts—Work Equipment		2,128.60	
Total		$13,787,961.45	
Deduct for Equipment destroyed, sold or retired:			
Net Value	$1,325,856.59		
Salvage	338,819.83		
Depreciation	1,283,782.08		
		$2,948,458.50	
Total Equipment			$10,839,502.95
Total Road and Equipment			$24,359,053.35

whose line extends from Sewell's Point, Norfolk, Va., to Deepwater, W. Va., a distance of 440.69 miles, reaching important coal areas in West Virginia. It was opened for the transportation of coal in 1909. Shipments of coal have increased from 929,752 tons in 1910 to 7,829,241 tons in 1925. It has eight points of connection with your Company's system and is so located that it can be operated as a part of your Company's system with economies in operating expenses and capital expenditures.

In the belief that a lease of the Virginian would result in increased traffic and revenue, and in a development of the territory tributary to both lines without unnecessary expenditure for new or duplicate facilities, and that it would be in the interest of both companies and of the states and communities through which their lines run, the stockholders at a special meeting held May 23rd, 1925, approved a lease of the Virginian for a term of 999 years. The lease provides for the payment by your Company of operating expenses, taxes, interest on funded debt, a reasonable amount for the maintenance of the corporate organization, and dividends at the rate of 6 per cent. per annum on the Virginian's outstanding preferred stock, 279,550 shares, and common stock, 312,715 shares, these dividends aggregating $3,553,600 per annum. Similar approval was given by the stockholders of the Virginian Railway Company. Following this action application was filed by your Company with the Interstate Commerce Commission on July 2nd, 1925, for its authority to acquire control of the Virginian Railway Company by lease. Hearings upon this application were commenced before an Examiner on October 12th, 1925, and continued, with occasional adjournments, until January 28th, 1926, and the case is now with the Interstate Commerce Commission for decision.

During the year an important connection of the Virginian line with your Company's line at Matoaka, W. Va., was developed and improved, giving the Virginian an outlet over your Company's line to the Lakes and Northwest. Heretofore the Virginian operations were limited to eastbound business only.

Industries

Among the new local industries are the following:

20 manufactories of mineral, metal and other products,
7 manufactories of lumber products,
22 manufactories of farm implements and farm products,
3 coal mines.

At the close of the year there were 215 companies organized for producing coal and coke on your Company's lines, with a total of 301 separate mines, of which 241 were in actual operation.

Of the 16 iron furnaces with a total daily capacity of 3,680 tons of pig, 3 having a total daily capacity of 1,200 tons were in blast.

Changes in Organization

On February 28th, 1926, pursuant to the Company's Pension Regulations, W. B. Bevill, Passenger Traffic Manager, was retired.

W. C. Saunders, formerly General Passenger Agent, was appointed Passenger Traffic Manager, effective March 1st, 1926.

The Board expresses to the officers and employees its appreciation of the fidelity and efficiency with which they have served the Company throughout the year.

By order of the Board of Directors,
A. C. NEEDLES,
President.

Railway Financial News

(Continued from page 985)

Chicago, Indianapolis & Louisville

	1925	1924	Increase or decrease
Average mileage operated	647.86	649.26	—1.40
Railway operating revenues	$17,686,040	$17,044,000	$642,040
Maintenance of way	$1,841,716	$1,769,709	$72,007
Maintenance of equipment	3,766,046	3,603,969	162,077
Transportation	6,267,011	6,111,834	155,177
Total operating expenses	$12,869,194	$12,468,741	$400,453
Operating ratio	72.77	73.16	—.39
Net revenue from operations	$4,816,846	$4,575,259	$241,587
Railway tax accruals	896,483	936,985	—40,502
Railway operating income	$3,920,362	$3,636,920	$283,442
Equipment rents, Dr.	$612,842	$789,852	—$177,010
Joint facility rents, Dr.	463,998	689,698	—225,700
Net railway operating income	$2,843,523	$2,157,370	$686,153
Non-operating income	128,737	152,411	—23,675
Gross income	$2,972,259	$2,309,781	$662,478
Rent for leased roads	$36,951	$34,787	$2,164
Interest on funded debt	1,300,691	1,255,011	45,681
Total deductions from gross income	$1,351,510	$1,305,036	$46,474
Net income	$1,620,750	$1,004,746	$616,004
Disposition of net income:			
Dividends on pref. stock, 4 per cent	$199,652	$199,652	.....
Dividends on common stock, 4½ cent in 1924; 5 per cent in 1925	524,850	472,365	$52,485
Surplus for year carried to profit and loss	$896,248	$332,729	$563,519

Delaware & Hudson.—*Bonds Authorized.*—The Interstate Commerce Commission has approved the issuance of $2,196,000 first and refunding mortgage 4 per cent bonds to be sold to Kuhn, Loeb & Co. at 90. Sale of these bonds to the public was reported in the *Railway Age* of February 27.

Denver & Rio Grande Western.—*No Interest on Federal Mortgage Bonds.*—Statement issued by board of directors says:

"The Board of Directors of the Denver & Rio Grande Western Railroad Company at a special meeting held last Tuesday afternoon (March 30) authorized the payment on May 1, 1926, of the full amount of sinking fund under the general mortgage for the two-year period ending December 31, 1926, amounting to $596,160.

"At the same time the board of directors determined that no income was available for the payment of interest on the general mortgage bonds, which interest during the period prior to February 1, 1929, is payable only in the discretion of the board out of the net income of the company, as ascertained and defined by the general provisions of the general mortgage.

"Although the result of operations for the six-month period ended January 31, 1926, showed a larger surplus than for the preceding six-month period, the board of directors, in view of the cash requirements of the company, determined that the interest upon the general mortgage bonds could not be paid with due regard for the protection of the property of the railroad company and the maintenance of efficient service thereupon."

Fernwood & Gulf.—*Final Value.*—The Interstate Commerce Commission has fixed the final value for rate-making purposes as of 1916 at $579,632.

Florida East Coast.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has approved the issuance of $2,700,000 equipment trust certificates, series H, paying 4½ per cent interest to be sold to J. P. Morgan & Co. at 97⅛. The certificates mature in equal annual amounts on March 1 in each of the years from 1927 to 1941. The equipment includes 45 locomotives, 40 caboose cars, 12 new passenger train cars, 15 passenger coaches converted from Pullman sleeping cars and 2 second-hand business cars, having a total approximate cost of $3,547,640.

Kansas City, Mexico & Orient.—*Loan to Receiver.*—The Interstate Commerce Commission has authorized an extension, until December 1, 1935, of the loan from the United States Government of $2,500,000 first approved October 11, 1920, and previously extended. This is in connection with the re-organization of the company, application to issue securities in connection with which is now still pending before the Interstate Commerce Commission.

Macopin.—*Abandonment.*—This company and the New York, Susquehanna & Western have applied to the Interstate Commerce Commission for authority to abandon a line from Macopin Lake Junction, N. J., to Echo Lake, 1.5 miles.

Missouri-Kansas-Texas.—1925 *Earnings.*—The tabloid annual report for 1925 shows net corporate income after fixed charges and interest on adjustment bonds of $6,117,619, equivalent after allowance for 7 per cent dividends on the preferred stock to $5.41 a share on the common. Net corporate income in 1924 was $5,508,438 equivalent to $.72 a share on the common.

Selected items from the income statement follow:

Missouri-Kansas-Texas

	1925	1924	Increase or decrease
Average mileage operated	3,189	3,193	—5
Railway operating revenues	$57,492,914	$57,309,345	$183,569
Maintenance of way	$7,404,574	$7,563,137	—$158,564
Maintenance of equipment	11,422,783	11,517,475	—94,692
Transportation	17,592,364	17,363,774	228,590
Total operating expenses	$39,618,128	$39,732,035	—$113,906
Net revenue from operations	$17,874,785	$17,577,310	$297,475
Railway tax accrual	2,867,589	3,215,687	—348,097
Railway operating income	$14,981,772	$14,330,220	—$651,552
Net railway operating income	Not shown		
Non-operating income	$921,384	$877,155	$44,229
Gross income	$15,903,155	$15,207,375	$695,781
Fixed interest charges	$4,432,446	$4,725,955	—$293,509
Interest on adjustment bonds	2,738,387	2,790,085	—51,699
Net income	$13,288,452	$13,024,478	$263,973

MISSOURI PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Marion & Eastern by purchase of its stock for $190,000.

NACOGDOCHES & SOUTHEASTERN.—*Abandonment and New Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon operation over that part of the track of the Frost Lumber Industries, Inc., of Texas, from La Cerda to Pershing, 6 miles, built to serve lumber operations which have since ceased operation. The company has also been authorized to operate under trackage rights over another line of the Frost Lumber Company from Oil Springs, Tex., to Calgary, 28 miles. This new line to be constructed by the lumber company will connect with the Nacogdoches & Southeastern at Oil Springs and with the Gulf, Colorado & Santa Fe at Calgary. This line will open up a new timber area and the purpose of operation over it by the railroad is to give the communities served common carrier service. Request for permission to retain excess earnings on this operation was denied. All of the stock of the Nacogdoches & Southeastern is owned by the lumber company.

NEW YORK CENTRAL LINES.—*Equipment Trust.*—The New York Central, Michigan Central and Cleveland, Cincinnati, Chicago & St. Louis have applied to the Interstate Commerce Commission for authority for an additional issue of $11,172,000 of 4½ per cent equipment trust certificates to be used in acquiring $16,031,491 of equipment. It is proposed to sell the certificates to J. P. Morgan & Co., at 97. The application is supplemental to that of April 27, 1925, for an issue of $10,530,000 of certificates.

NEW YORK, NEW HAVEN & HARTFORD.—1925 *Earnings.*—Tabloid annual report issued to stockholders under date of March 29 shows net income after interest and other charges of $7,418,252, equivalent to $4.72 a share on the outstanding stock as compared with $2,998,650 or $1.90 a share in 1924. The income account follows:

NEW YORK, NEW HAVEN & HARTFORD

	1925	Comparison with 1924 increase or — decrease
Income Account—		
Revenue from freight transportation	$67,667,234	$4,235,094
Revenue from passenger transportation	49,735,504	65,126
Revenue from mail, express and other transportation	14,863,684	752,504
Total railway operating revenues	$132,266,422	$5,052,724
Railway operating expenses	97,745,382	265,059
Net revenue from railway operations	$34,521,040	$4,787,666
Taxes	4,890,151	82,178
Uncollectible railway revenue	19,045	—1,931
Equipment and joint facility rents—Net debit	6,287,049	1,169,903
Net railway operating income (income on which rate of return is based)	$23,324,795	$3,537,516
Other income	6,987,098	617,849
Total income	$30,311,893	$4,155,365
Income Deductions—		
Interest	15,486,988	—268,251
Other	7,406,653	4,015
Net income transferred to credit of profit and loss	$7,418,252	$4,419,602

NORFOLK & WESTERN.—1925 *Earnings.*—The annual report for 1925 shows net income after interest and other charges of $26,564,758, equivalent after allowance for preferred dividends to $18.67 a share on the common stock. Net income in 1924 was $18,243,348 or $12.85 a share. (See excerpts from annual report appearing on adjoining pages.)

PENNSYLVANIA.—*New Director.*—Charles Day, president of Day & Zimmerman, Inc., Philadelphia, has been elected a director filling the vacancy which has existed since the death on February 17 of George Wood.

PITTSBURGH & WEST VIRGINIA.—*Application to Issue Non-voting Preferred Denied.*—See article on another page entitled "Restriction of Voting Rights of Preferred Stock Disapproved.

In a statement issued on March 31, Frank E. Taplin, chairman of the board, said that the company had decided not to issue preferred stock but instead to continue its present capital structure. The statement said:

"After having given the matter careful consideration the executive committee of the Pittsburgh & West Virginia has decided, in view of the wishes of the Interstate Commerce Commission, not to issue preferred stock, but to maintain the present capital structure.

"Furthermore, in view of the company's earnings, it has been decided to place the stock on a dividend basis, and in accordance therewith a dividend of 6 per cent has been declared, payable beginning April 30, 1926."

SANDERSVILLE.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes to be $46,673 as of 1916.

SOUTHERN.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized the issuance of $6,900,000 4½ per cent equipment trust certificates, series AA, to be sold to Drexel & Co., at 97⅛. The certificates are to be dated April 1, 1926, and mature in semi-annual installments beginning October 1, 1926, and extending until April 1, 1941. The equipment covered by the trust includes 61 locomotives, 50 passenger train cars and 2,750 freight cars having a total approximate cost of $8,622,000.

SOUTHERN NEW ENGLAND.—*Receivership.*—Roy D. Garner of Providence and Clifton K. Fauver of New Rochelle, N. Y., were appointed receivers by Judge Brewster in the federal court in Boston on March 29, and by Judge Arthur L. Brown in the federal court in Providence, on a petition filed by the Central Vermont. The Southern New England was organized to build a line from Palmer, Mass., to Providence, in the interest of the Central Vermont which desired to reach Providence, R. I., and had plans also of building a line into Boston. The company had acquired land, cleared its right of way and put in cuts, culverts and embankments. It now is without funds to complete the project in addition to which it owes the Central Vermont some $3,600,000, about $3,000,000 represented by stock and some $600,000 in the form of loans. The time limit by statute for the construction of the railway has been extended on numerous occasions by the Massachusetts and Rhode Island legislatures and the present time limit is set at December 31, 1926. The receivers have been authorized to liquidate the property, to sell it all or in part, with the concurrence of the court. The Boston receivership includes that part of the line in Massachusetts and the action at Providence that part of the line in Rhode Island. It has been suggested that attempts should be made to sell the property to the New York Central or to the Canadian Pacific. The line would have connected with the Canadian National and Boston & Albany (leased to the New York Central) at Palmer.

ST. LOUIS-SAN FRANCISCO.—*Abandonment of Branch.*—The Interstate Commerce Commission has issued a certificate authorizing the St. Louis-San Francisco and its leased line, the Kansas City, Fort Scott & Memphis, to abandon the branch line from Linton, Kans., to Rich Hill, Mo., 20.78 miles, built originally to serve coal operations which have since ceased operation.

TEXAS & NEW ORLEANS.—*Tentative Valuation.*—The Interstate Commerce Commission in its tentative valuation report places the final value for rate-making purposes of the property owned and used for common-carrier purposes at $18,308,200 as of 1918.

UTAH.—*Control of National Coal Railway.*—The Interstate Commerce Commission has approved the acquisition of the National Coal Railway operating 8.5 miles of line serving coal operations in Carbon County, Utah, by purchase of its entire capital stock and by lease. Authority has been granted to the Utah to assume obligation and liability with respect to $150,000 first mortgage bonds of the National Coal Railway.

WICHITA VALLEY.—*Tentative Valuation.*—The Interstate Commerce Commission's tentative valuation report as of 1918 places the final value for rate-making purposes of the property owned and used at $670,000.

Dividends Declared

Cincinnati, New Orleans & Texas Pacific.—200 per cent common stock dividend, payable April 29 to holders of record April 9.

Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable April 1 to holders of record March 25.

Delaware, Lackawanna & Western.—3 per cent, quarterly, payable April 20 to holders of record April 3.

Meadville, Conneaut Lake & Linesville.—2 per cent, payable April 1 to holders of record March 17.

Wrightsville & Tennille.—Preferred, 6 per cent, common, 3 per cent.

Average Price of Stocks and Bonds

	Mar. 30	Last Week	Last Year
Average price of 20 representative railway stocks	84.69	90.08	76.87
Average price of 20 representative railway bonds	95.24	95.67	89.44

Railway Officers

Executive

Henry Ruhlender, chairman of the board of the Missouri-Kansas-Texas, has announced that he will submit his resignation at the annual election of officers to be held by the board on April 9.

L. E. McKeand, valuation auditor of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been promoted to treasurer and assistant to the president, with the same headquarters, succeeding J. B. Hill, who has been elected president. **M. C. Loftin** has been appointed acting assistant treasurer and acting assistant secretary and transfer agent, with headquarters at Nashville. Mr. McKeand was born in 1878 at Nashville and entered railway service in 1896 as a clerk and stenographer in the engineering department of the Nashville, Chattanooga & St. Louis. He was promoted to chief clerk in 1902 and held that position until 1914 when he was promoted to valuation auditor and auditor of miscellaneous accounts. He continued in that capacity until his recent promotion to treasurer and assistant to the president.

L. E. McKeand

W. P. Bruce, general manager of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been promoted to vice-president and general manager, with the same headquarters, a newly created position. He was born on October 5, 1861, at Nashville, and was educated at the Springfield Academy, Springfield, Tenn. He entered railway service in October, 1876, as an agent and operator on the St. Louis & Southeastern, now a part of the Louisville & Nashville, and was promoted to train dispatcher in 1880. Mr. Bruce was employed as an agent on the Peoria, Decatur & Evansville, now a part of the Illinois Central, in 1882, and two years later was appointed train dispatcher on the Chicago, Burlington & Quincy. In 1889 he was employed in a similar capacity on the Gulf, Colorado & Santa Fe, and in the following year was appointed train dispatcher on the Union Pacific. Mr. Bruce was appointed train dispatcher on the East Tennessee, Virginia & Georgia in 1891, returning to the Louisville & Nashville in 1893 in the same capacity. He was promoted to yardmaster in 1889 and in 1900 was promoted to trainmaster of the Nashville terminals of the Louisville & Nashville and the Nashville, Chattanooga & St. Louis. He was promoted to superintendent of terminals of the same roads in 1902 and continued in that capacity until 1918, when he was promoted to general manager of the Nashville, Chattanooga & St. Louis. He held that postiion until his recent promotion to vice-president and general manager.

W. P. Bruce

Operating

William L. Voelker, general yardmaster of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Danville, Ill., has been promoted to assistant trainmaster on the St. Louis division.

W. W. Weiss has been appointed superintendent of the Toledo territory of the Wheeling & Lake Erie and the Lorain & West Virginia, with headquarters at Toledo, Ohio, succeeding **R. F. Smith,** promoted.

B. C. Murphy has been appointed trainmaster of the Central Kansas division of the Missouri Pacific, with headquarters at Osawatomie, Kan., succeeding **H. O. Brenner,** transferred. **H. B. Brandon** has been appointed trainmaster on the Louisiana division, with headquarters at Monroe, La., succeeding Mr. Murphy.

C. B. Strohm, superintendent of transportation of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been granted a leave of absence on account of illness. **H. R. Lake,** superintendent of the Panhandle division, with headquarters at Wellington, Kan., has been promoted to acting superintendent of transportation, succeeding Mr. Strohm.

Fred Grundler, who has been promoted to superintendent of the Michigan division of the New York Central, with headquarters at Elkhart, Ind., was born on August 31, 1876, at Nevada, Ill., and entered railway service in April, 1893, as an agent and telegraph operator on the Chicago & Alton. He was employed as a telegraph operator on the Indiana, Illinois & Iowa in 1899, being transferred to train service as brakeman and later as conductor in 1900. Mr. Grundler was promoted to trainmaster in 1909 and was appointed a trainmaster on the Chicago, Indiana & Southern in 1911. He was appointed a trainmaster on the New York Central in 1914 and held that position until 1920 when he was promoted to assistant division superintendent. He continued in that capacity until his recent promotion to superintendent.

W. M. Thurber, superintendent of the Dubuque division of the Chicago, Milwaukee & St. Paul, with headquarters at Dubuque, Ia., has been transferred to the Illinois division, with headquarters at Savanna, Ill., succeeding **C. F. Urbutt,** who has resigned to take charge of the construction and operation of a railway in Chile for the Guggenheim interests, as reported in the *Railway Age* of March 27. **E. A. Meyer,** superintendent of the Southern Minnesota division, with headquarters at Austin, Minn., has been transferred to the Dubuque division in place of Mr. Thurber. **G. A. Van Dyke,** superintendent of the Twin City Terminal division, with headquarters at Minneapolis, Minn., has been transferred to the Southern Minnesota division, succeeding Mr. Meyer. **E. H. Bannon,** superintendent of the Sioux City and Dakota division, with headquarters at Sioux City, Ia., has been transferred to the Twin City Terminal division, succeeding Mr. Van Dyke. **A. J. Elder,** assistant superintendent of the Twin City Terminal division, with headquarters at Minneapolis, has been promoted to superintendent of the Sioux City and Dakota division, in place of Mr. Bannon.

Traffic

W. C. Ragin and **R. J. Doss** have been appointed general freight agents of the Atlantic Coast Line, both with headquarters at Wilmington, N. C.

C. H. Mitchell, general agent of the Chicago, Milwaukee & St. Paul, with headquarters at New York, has been promoted to freight traffic manager, with headquarters at Chicago, a newly created position.

J. P. McDonald has been appointed division freight agent of the Lehigh Valley, with headquarters at Wilkes-Barre, Pa.,

succeeding **R. G. McDowell,** deceased. **F. E. Erdman** has been appointed division freight agent at Hazleton, Pa., succeeding Mr. McDonald.

W. E. Maloney has been appointed Canadian freight and passenger agent of the New York Central (line Buffalo, N. Y., Clearfield, Pa., and East), with headquarters at Montreal, P. Q., succeeding F. E. McGrath, promoted.

R. G. Buford, industrial agent of the Missouri-Kansas-Texas, with headquarters at Dallas, Texas, has been promoted to assistant industrial commissioner, with the same headquarters, succeeding **L. B. Chipley,** who died on February 15.

H. E. Pierpont, traffic manager of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been promoted to acting chief traffic officer, with the same headquarters, succeeding **R. M. Calkins,** who has been granted leave of absence.

W. C. Saunders, general passenger agent of the Norfolk & Western, with headquarters at Roanoke, Va., has been promoted to passenger traffic manager, with the same headquarters, succeeding W. B. Bevill, who has retired after 50 years of service. **J. L. Bladon,** assistant general passenger agent, with headquarters at Cincinnati, Ohio, and Columbus, has been promoted to general passenger agent in place of Mr. Saunders. **C. H. Johnson,** chief clerk in the passenger department at Roanoke, has been promoted to assistant general passenger agent, succeeding Mr. Bladon.

Mechanical

G. E. Sisco has been appointed assistant master mechanic of the Fort Wayne division of the Pennsylvania, with headquarters at Fort Wayne, Ind.

L. A. Richardson, superintendent of motive power of the Chicago, Rock Island & Pacific, with headquarters at Des Moines, Ia., has been promoted to general superintendent of motive power, with headquarters at Chicago, succeeding **W. J. Tollerton,** deceased.

Engineering, Maintenance of Way and Signaling

E. F. Schulz has been appointed assistant chief engineer of the Springfield, Havana & Peoria, with headquarters at Springfield, Ill.

W. L. Darden has been appointed senior assistant engineer of the Seaboard Air Line. **J. C. Williams** has been appointed engineer of buildings. **L. N. Riggan** has been appointed assistant engineer, and **L. C. Holt** has been appointed right-of-way engineer. All will have headquarters at Savannah, Ga.

W. A. Roderick, engineer maintenance of way of the Wheeling & Lake Erie and the Lorain & West Virginia, has been appointed engineer maintenance of way and structures, with headquarters at Brewster, Ohio. **T. J. Williams** has been appointed special engineer in charge of surveys and construction, and will perform such duties as may be assigned to him. He will have headquarters at Cleveland, Ohio. The office of chief engineer has been abolished.

J. B. Baker, who has been appointed chief engineer maintenance of way of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., was born on December 20, 1882. He attended the University of Pennsylvania, and was graduated from that institution in 1905 with the degree of Civil Engineer. He entered railway service on July 1, 1905, with the construction corps of the Pennsylvania, and in 1910 was appointed assistant supervisor. In the spring of 1916 he was appointed to special duty in the office of the general manager at Philadelphia, and after various assignments and promotions was appointed engineer maintenance of way, with headquarters at Cleveland for the newly organized Lake division after the return of the railroads to their owners in March, 1920. On April 1, 1923, he was transferred in the same capacity to the Eastern Pennsylvania division, with headquarters at Harrisburg, Pa., where he remained until the time of his recent appointment to chief engineer maintenance of way of the Central region.

William L. Ekin, who has been appointed chief engineer, maintenance of way of the Western region of the Pennsylvania, with headquarters at Chicago, was born on September 18, 1879, at Xenia, Ohio. He was educated at Ohio Wesleyan University and at the Case School of Applied Science, and entered railway service on July 16, 1900, on the Cincinnati division of the Pennsylvania. In September, 1905, he became assistant engineer on the Michigan division of the Vandalia (now part of the Pennsylvania), and on May 1, 1907, was promoted to engineer of the same division. On July 1, 1913, he was transferred to the St. Louis division, and on February 11, 1918, he became superintendent of the Peoria division, and until October 24, 1923, was successively superintendent of the Michigan division, the Conemaugh division and the Philadelphia division. On the latter date he became general superintendent of the Northern division, and on January 16, 1924, superintendent of the Philadelphia division, which position he was holding at the time of his recent appointment to chief engineer maintenance of way of the Western region.

Special

T. Akahoshi has been appointed resident representative at the New York office of the Japanese Government Railways, succeeding **I. Koyama,** who has returned to Japan.

Obituary

Evan H. Hughes, for many years general western passenger agent for the Grand Trunk, died at Evanston, Ill., on March 31. Mr. Hughes was 79 years of age.

H. J. Merrick, assistant to the general manager of the New York Central Lines West of Buffalo, with headquarters at Cleveland, Ohio, died suddenly at his home in East Cleveland, on March 23.

Charles T. Pease, who was in charge of surveys in connection with the construction of the Rio Grande Southern between Ridgway, Colo., and Durango, and who was also at various times employed as a civil engineer by the Atchison, Topeka & Santa Fe, the Union Pacific and the Colorado & Southern, died at Denver, Colo., on March 20, of pneumonia.

George F. Randolph, formerly vice-president of the Baltimore & Ohio, died at his home in Baltimore, Md., on March 25, following a heart attack. Mr. Randolph was born in 1857, at Norwalk, Ohio, and attended Phillips Academy at Exeter, N. H. He entered railway service in 1873, and in 1896 became general traffic manager of the southwestern lines of the Baltimore & Ohio. In 1899 he was elected president of the Staten Island Rapid Transit, acting also during this time for the Baltimore & Ohio. He was chosen first vice-president of the Baltimore & Ohio in 1904, and of the Baltimore & Ohio Southwestern in 1910, serving also as a director of those roads. Mr. Randolph retired in 1916, and his last activities were as traffic assistant to the regional director of the Eastern district of the United States Railroad Administration during the first half of 1918.

Clement F. Merrill, vice-president and general superintendent of the Lehigh & Hudson River, who died suddenly at his home in Warwick, N. Y., on March 18, was born on October 8, 1877, at Peoria, Ill., and was later graduated from Amherst College. He entered railway service on August 1, 1899, with the Indiana, Illinois & Iowa (now a part of the New York Central), and from January 1, 1901, to November, 1902, he was chief clerk to the trainmaster of the Reading, at Harrisburg, Pa. From November, 1902, to September, 1905, he was chief clerk to the assistant superintendent of the Central of New Jersey at Mauch Chunk, Pa., and from the latter date to April, 1907, was assistant trainmaster of the same road at Northampton, Pa. In April, 1907, he became assistant superintendent of the Lehigh & Susquehanna division of the same road, which position he held until November, 1910, when he became superintendent of the Lehigh & Hudson River, with headquarters at Warwick, N. Y. In May, 1925, he was promoted to vice-president and general superintendent, which position he was holding at the time of his death. At this time he was also president of the Eastern Association of Car Service Officers.